Chinese Medicine Usage in Respiratory Disorders: A Health Service Research of Teaching Clinic Patients

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic awards; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and any contribution carried out by a third party is duly acknowledged.

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ABBREVIATIONS

Acronym	**Description**
AIHW	Australian Institute of Health and Welfare
CAM	Complementary and Alternative Medicine
CBD	Central Business District
CINAHL	Cumulative Index to Nursing and Allied Health Literature
COPD	Chronic Obstructive Pulmonary Disorder
df	Degree of freedom
RMIT	Royal Melbourne Institute of Technology
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
TAFE	Technical and Further Education
The Teaching Clinic	Chinese Medicine Teaching Clinic, RMIT University
UK	The United Kingdom
UTS	University of Technology Sydney
US	The United States of America

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SUMMARY

Chinese medicine, a complementary and alternative medicine (CAM) practice, has become more accepted in the Western world (including Australia) since it was established thousand years ago. Although Western medicine offers a range of treatments, patients with chronic disease may choose CAM to cope with their symptoms and disease burden. Respiratory disorders have become one of the top five health problems for which CAM (particularly Chinese medicine) is commonly sought. Respiratory disorders are common in Australia; for example, allergic rhinitis and asthma affect about 15% and 10% of population, respectively. The prevalence of respiratory disorders means that they are the sixth highest health expenditure group in Australia. The impact of respiratory disorders on health services include: being the most frequent reasons for general practice visits, and among the top ten reasons for hospitalisations. There were limited studies on Chinese medicine usage for respiratory disorders and there are concerns related to its usage, particularly in an outpatient setting.

Therefore, this health service research project aimed to: (a) determine the demographic profile and common conditions of patients in a Teaching Clinic; (b) describe the patients' reports of adverse events from Chinese medicine treatment; (c) examine the overall treatment outcomes and treatment interventions of Chinese medicine in patients with respiratory disorders; and (d) assess the level of knowledge and compliance with Chinese medicine in patients with respiratory disorders.

The first component of this thesis is a comprehensive, systematic literature review on existing studies that assessed the quality of care based on medical records within outpatient practice (Chapter 2). The second component is a study examining the medical records in the Chinese

Medicine Teaching Clinic at RMIT University (Chapter 3). The last component is a postal survey focusing on a subgroup of the patients (with respiratory disorders) attending the clinic (Chapter 3). The RMIT University's Human Research Ethics Committee reviewed and approved the project.

For the medical record study, medical records in the Teaching Clinic dated 1 January 2010 to 31 December 2011 were reviewed and extracted to a pre-defined template. During the study period, 1,677 patients had made 11,529 visits to the Teaching Clinic. The mean age of patients was 42.1±18.1 years. Patients were mainly female (65.7%) and Australian-born (66.2%). Patients generally had Chinese medicine for musculoskeletal and pain disorders, emotional disorders, obstetrics and gynaecological disorders, respiratory disorders and gastrointestinal disorders. The type of respiratory disorders commonly presented included common cold, cough, allergic rhinitis, sinus problems and asthma. To manage respiratory disorders, most patients had acupuncture combined with another type of Chinese medicine. Common acupoints and Chinese herbs used to manage respiratory disorders were detailed and discussed in Chapter 3. For example, in managing common cold acupoints LI4, SJ5, LU7, GB20 and LU5, and Chinese herbal medicine formulations Yin Qiao San and Sang Ju Wan were commonly prescribed. Inconsistent data on overall treatment outcomes documented in the medical records made the assessment and analysis difficult. Therefore, questions on overall treatment outcomes were included in the survey questionnaire. The researcher identified 153 adverse events from the medical records; most were gastrointestinal effects such as diarrhoea, nausea, heartburn. The above findings provide data on Chinese medicine patients regarding their demographic profile, health conditions and treatment received.

For the postal survey study, a questionnaire was developed and mailed to all (n=299) eligible potential respondents identified from the medical record study described above. In brief, the survey asked about the use of health services, adverse events, compliance with Chinese medicine, knowledge of Chinese medicine and the demographic characteristics of respondents. A total of 63 surveys were returned, a 16.7% response rate. The survey respondents were demographically significantly different from general patients in the Teaching Clinic; females and those aged 45 to 64 years were over-represented. The survey provided additional data on demographic characteristics compared with the medical records, including: 26.7% of health insured respondents were covered for Chinese medicine; and over half of the respondents earned more than $60,000 annually and had tertiary education.

Survey respondents largely reported positive overall treatment outcomes; only nine respondents had no progress, symptoms worsen or forgot the treatment outcome. When asked about current respiratory disorders management, nearly three quarters of respondents used Western medicine, supplements, other CAM or Chinese medicine. More respondents disclosed their other treatment to Chinese medicine practitioners (88.5%) compared with disclosing their Chinese medicine use to general practitioners (62.9%). Respondents mostly did not inform their general practitioners because of a lack of time during consultation and because they deemed it unnecessary for general practitioners to know. Almost half of the respondents had moderately complied (44.3%) with Chinese medicine; and older respondents tended to be more compliant. In terms of knowledge, over a third of the respondents had good knowledge (34.9%) of Chinese medicine. Respondents knew more about the basic concepts and less about regulation of Chinese medicine. Of 63 respondents, only five reported adverse events; Chinese medicine practitioners verified two events and were informed about three events.

Findings from both studies add to the limited number of studies performed in an outpatient setting of Chinese medicine practice, particularly in respiratory disorders. In the short-term, this thesis provides an understanding on: respondents' behavior in using Chinese medicine treatment and other health services; treatment outcomes; and knowledge, compliance and safety aspects of Chinese medicine treatment. Gaps in clinical training and practice in the Teaching Clinic were also identified. Curriculum design, clinical teaching and medical records documentation can be improved to fill these gaps, to enhance health service and quality of care provided in the Teaching Clinic.

In summary, this study was the first to provide insight on quality of care and treatment practice in the Chinese Medicine Teaching Clinic, RMIT University. Additionally, this thesis reported treatment outcomes and communication on health service from the patients' point of view. Several study limitations were identified, and accordingly, strategies for improving documentation, study design and clinic practices were recommended. Implementing these suggestions can improve health service and quality of care in the Teaching Clinic.

CHAPTER 1. INTRODUCTION

1.1 Background

Allergic rhinitis, asthma and rhinitis are common respiratory disorders. During the author's practice as a Western pharmacist, some patients with these disorders have resorted to using complementary and alternative medicine (CAM), either alone or concurrently with conventional medication. These patients are usually over 50 years old with multiple chronic disorders (apart from their respiratory disorders) and consume a number of Western medicines to manage their health. Chinese herbs, Western herbs, acupuncture and Qi Gong exercise are some examples of CAM favoured by patients who want to reduce their dependency on Western medicine and seek alternative treatment with a more natural approach that may manage their disorder better. Patients generally describe their experience of having a chronic respiratory disorder as suffering the disorder for years (some even throughout their whole life) and as having their daily routine (such as mobility or self-care) gradually restricted over time.

These experiences motivated the author to pursue a Master's degree to research the use of Chinese medicine, particularly for patients with respiratory disorders. A usual concern of Western health practitioners whose patients are having Chinese medicine treatment is the outcome and safety of the treatment. While the Chinese Medicine Teaching Clinic at RMIT University keeps medical records on their patients, research had not been conducted in this setting. This prompted the author to use this readily available source of information as the basis for the research program in this thesis.

1.2 Respiratory Disorders in Australia

1.2.1 Prevalence and Expenditure of Respiratory Disorders

Respiratory disorders affect global and local populations. The common respiratory disorders chronic obstructive pulmonary disease (COPD) and lower respiratory infections were the third and fourth most frequent causes of death worldwide in 2010 [(1)]. Respiratory conditions are common; each year, nearly six million Australians experience a chronic respiratory disorder. In addition, respiratory conditions are linked with significant burden of disease and high health expenditure [(2)]. Respiratory disorders are therefore a significant health concern in Australia and worldwide.

Among chronic respiratory disorders, allergic rhinitis is the most common, affecting 15% of Australians and more often seen in people aged 15 to 54 years old, compared with other age groups [(2)]. Other common respiratory disorders, such as asthma and COPD, pose the biggest national health burden. Asthma affects 10% of Australians and is most common in boys aged five to nine years old (15%). Whereas for COPD, approximately 5% of Australians ages 55 years and older suffer the condition. Many Australians may have two or more chronic respiratory disorders; for example, 41% of Australians with asthma have sinusitis concurrently [(2)].

The prevalence of respiratory disorders accounts for about $5 billion of health expenditure from 2008 to 2009 [(2, p.483)]. This represents approximately 6% of the total health spending in Australia, making respiratory disorders the sixth highest expenditure group. The health expenditure includes prescription medication and medical services provided to hospitalised and out-patients at public and private hospitals [(2, p.483)].

1.2.2 Impact of Respiratory Disorders

Chronic respiratory disorders not only restrict daily activity but can also severely affect a patient's ability to perform activities such as self-care, mobility and communication. The Survey of Disability, Ageing and Carers by the Australian Bureau of Statistics showed that 8.2% of asthma sufferers have a certain degree of disability, and 24.8% sometimes or frequently require support to manage their daily activities (3). Respiratory disorders in Australia are associated with a high burden of disease with an estimated 200,000 disability-adjusted life years. This figure placed respiratory disorders fifth in 2003 and 2010 on the projected total burden, behind cancer, cardiovascular disease, neurological conditions and mental disorders (2, p.118).

Respiratory disorders have an impact on health services through general practice visits and hospitalisations. Respiratory disorders were the most frequent reasons for visiting a general practice in 2010 and 2011, at a rate of 20.4 per 100 visits (4, p.55). For patients with chronic respiratory disorders, aggravation of the condition often leads to hospitalisation. A primary diagnosis of respiratory conditions ranked sixth (375,000 hospitalisations) as the reasons for hospitalisations between year 2009 and 2010, after digestive conditions (870,000 hospitalisations), cancer (580,000 hospitalisations), injury or poisoning (560,000 hospitalisations), circulatory conditions (480,000 hospitalisations) and obstetrics conditions (480,000 hospitalisations) (2, p.419).

Other than the impact of respiratory conditions on the health care service, the patients' quality of life is another concern. Common symptoms of respiratory disorders, such as breathlessness, can interfere with daily routine, restrict physical activity and disrupt sleep (3). Quality of life is measured using four health constructs: physical, psychological, social and environmental (5). Of patients with chronic respiratory disorders, 81.1% were dissatisfied or very dissatisfied with their quality of life. Dissatisfaction with quality of life may be due to exacerbation of the respiratory disorders, which leads to hospitalisation or increased visits to medical practitioners [5].

The Australian Institute of Health and Welfare's (AIHW) Report of Australia's Health 2012 analysed mortality patterns from 1979 to 2009 and found that the number of deaths from respiratory disorders has steadily decreased in recent years. Despite this reduction in mortality caused by respiratory disorders, chronic lower respiratory disorders and lung cancer were the second (11.0%) and third (8.4%), respectively, leading causes of death in male and female Australians in 2009. Changes in causes of mortality can be attributed to a shift in factors such as: behaviours, exposures, social and environmental conditions; and progress in medical and health-related fields [2].

1.3 Definition of Common Respiratory Disorders

The respiratory system covers the airways and organs including the nasal cavities, throat, larynx, pharynx, trachea and lung. The lung can be further broken down into bronchi, bronchiole, alveolar ducts and alveoli. These structures support the respiratory system's function of ventilation and exchanging gases with the environment [(6)]. Respiratory disorders are a diverse group of conditions that can affect any part of the airways and organs of the respiratory system. Upper respiratory tract infections are those that affect the nasal cavities, throat or larynx [(7)].

The main respiratory disorders in Australia are described below and include: asthma, allergic rhinitis, chronic sinusitis, COPD, influenza, pneumonia, and sleep apnoea. Their epidemiology, health service impacts, comorbidities and complicating factors are as reported by AIHW [(8)].

- Asthma – A respiratory disorder in which the airways are constricted and cause wheezing and repetitive breathlessness. The severity of symptoms varies from mild to severe. The contributory factors to asthma are: allergens (such as dust mites), emotional well-being, allergies, medications, respiratory infections and strenuous activity. Corticosteroid medication acts to prevent asthma attacks whereas bronchodilators ease asthma attacks [(7)]. In 2011 and 2012, 10.2% of Australians (2.3 million people) were affected by asthma [(9)].
- Allergic rhinitis – A disorder in which allergens (such as pollen, mould spores, wheat or corn rusts) induce hypersensitivity inflammation of the nasal cavity. The symptoms include rhinorrhoea, sneezing, watery eyes and tickling of the nose and eye. The symptoms can be managed by avoiding allergens, medications and desensitisation (to improve tolerance to an allergen). Medications that are used to alleviate symptoms include antihistamines, decongestants and anti-inflammatory medications [(10)]. The

AIHW National Health Survey reported that 16.1% of Australians (3.2 million people) suffered allergic rhinitis in 2004 and 2005 (8).

- COPD – A chronic respiratory disorder characterised by continuous lung tissue impairment that leads to shortness of breath. COPD includes chronic bronchitis and emphysema, and the most common causative agent is cigarette smoking (7). Of Australians, 2.9% have COPD with a higher prevalence in females (1.6%) compared with males (1.3%) (8).
- Influenza – An infection of the upper respiratory tract that produces symptoms similar to those of the common cold (7). Unlike the common cold, the symptoms of influenza are more intense and may lead to serious medical complications such as bacterial or viral pneumonia, myocarditis, pericarditis and kidney failure. Influenza can be treated by antiviral medications and vaccination is the main prophylactic measure (11). In a survey of general practice in Australia, 40% of the 2,946 respondents had risk factors for influenza infection (4).
- Pneumonia – As a result of bacterial or viral infection to any part of the lungs, the lungs become inflamed and harden. Pneumonia is characterised by high grade fever, headache, breathlessness, chest pain and cough (8). The treatment depends on whether the causative agent is bacteria or virus (7). Pneumonia was listed as the sixth most common health problem among patients referred by general practitioners for hospital management (4).
- Sleep apnoea – The recurrent cessation of breathing during sleep due to obstruction of the airways. This disorder has been observed more frequently in males and obese people. This disorder results in daytime drowsiness, which is the reason why sufferers are often at a higher risk of accidents. Sleep apnoea affects nearly 26% of Australian men aged from 40 to 65 years old (8).

- Sinusitis – A disorder in which inflammation occurs in the sinuses membrane and produces symptoms of headache, teary eyes, pressure and pain in the nose. Causes of sinusitis include infection of dental or upper respiratory tract, abnormal structure of the nose or changes in elevation above sea level (12). In 2004 to 2005, chronic sinusitis affected 9.2% of Australians (1.8 million people): more commonly suffered by female (10.9%) than male (7.5%) (8).

1.4 Western Medicine Treatment for Respiratory Disorders

In managing chronic respiratory disorders, no cure has been discovered. Current Western medicine treatments for chronic respiratory disorders focus on relieving the symptoms or preventing the exacerbation of the disorders (13). For example, the Western medicine approach for asthma aims to lessen the harmful effect of asthma on the patients' physical health (particularly the impairment of airways) and mental health through medications such as bronchodilator beta-2 agonist inhaler (14). The other use of beta-2 agonist is to improve symptoms of chest infection from bronchitis. Although beta-2 agonist may relieve symptoms such as cough and wheezing, patients taking the medication are more prone to experience adverse effects including trembling and anxiety (15).

Patients with chronic respiratory disorders tend to be interested in CAM to supplement their use of Western medicine. CAM is commonly used to improve patients' respiratory symptoms and to help them unwind (16). Recognising the use of CAM, particularly Chinese medicine, for the treatment of respiratory disorders, several systematic reviews have examined the effectiveness of Chinese herbs in treating severe acute respiratory syndrome (17), common cold (18) and COPD (19). The findings suggested that, for severe acute respiratory syndrome and COPD, patients who use both Chinese herbs and Western medicine have a better quality of life compared with those using Western medicine alone (17, 19). For the common cold, taking Chinese herbs may reduce the duration of the symptoms (18).

1.5 Complementary and Alternative Medicine Use for Respiratory Disorders

CAM encompasses a broad range of health care practices and products that include herbal medicine, acupuncture, homeopathy, chiropractic, osteopathy and naturopathy. As the term implies, CAM has been used as an alternative to, or side by side with, Western medicine. CAM includes traditional medicines, many of which originate from the developing world and East Asia. Traditional medicine can be classified into two broad categories: first, are the well-established and documented traditional practices; and second are the less-established traditional practices which originated from minor ethnic groups. Chinese medicine, with its thousand years of practical experience, is classified in the first group [(20)]. Most CAM practices emphasise a holistic approach which considers the physical, mental, emotional and spiritual health of patients when addressing their health conditions [(21)].

The prevalence of CAM use has been constant over the years 1993 to 2007 in the United States (from 36% to 38%) and Australia (from 49% to 52%) [(22)]. Despite having a wide variety of Western medicines to ease or treat health conditions, respiratory disorders are among the top five health problems for which patients sought CAM [(23)]. The reasons for a preference for CAM include considering CAM to be safe, for general health, as prophylactic medicine, to ease symptoms and to alleviate the unwanted side effects of Western medicine [(24)]. Among the CAM treatments for respiratory disorders, Chinese medicine (namely acupuncture), herbal medicine and homeopathy are the most preferred [(25, 26)].

1.6 Chinese Medicine

The theory of Qi (energy or life force), five elements and equilibrium between yin and yang are the fundamentals of Chinese medicine. Chinese medicine with a history of thousands of years is developed in China and later disseminated to Korea, Japan and Vietnam. The people of these countries adapted Chinese medicine and created their own traditional medicine [(20)].

Chinese medicine is an ancient healing system and the first book entitled *The Yellow Emperor's Classic of Internal Medicine* was recorded in 3000 BC [(27)]. The book described the basis of healing as restoring the balance of Qi and the balance between yin and yang in the body. Qi is the life force or vital energy present in every living creature, and this force is important for our body to function normally. Yin and yang illustrate the two opposite and exchangeable natures that exist in all things. Available Chinese medicine treatments to restore these balances in the body are acupuncture, herbal medicine, food therapy and physical exercise [(27)]. As with any other traditional medicine, the treatment approach of Chinese medicine is different from Western medicine in terms of its holistic approach and treatment based on syndrome differentiation [(20)].

The effect of globalisation can be seen in Chinese medicine. The practice of Chinese medicine is no longer confined to China and other Asian countries, and has expanded to Western countries including Australia. Chinese medicine was introduced into Australia by Chinese settlers who worked in gold mines in the 1800s. Initially, the use of Chinese medicine was solely among Chinese settlers [(28)] and was later used in the wider population. In 1996, around 4,500 practitioners offered Chinese medicine treatment in Australia [(29)]. The increase in the number of Chinese medicine practitioners is associated with the escalating interest in Chinese medicine. Nationally, there are an estimated 15 million consultations for Chinese medicine each year, including 10.2 million for acupuncture, 2.1 million for Chinese herbal medicine and 2.7 million for Chinese massage [(30)]. Chinese medicine has been developing steadily in

Australia and a recent survey indicates that almost one in five Australians had used some form of Chinese medicine in the past year. The same study also identified that musculoskeletal pain and general health and well-being are the most common reasons for using acupuncture [(31)].

As with Western medicine, Chinese medicine may have side effects in some patients. Examples side effects are fainting, vomiting and allergic reaction, and in some cases hepatotoxicity has been reported [(32)]. These effects may result from consuming Chinese herbal medicine or having acupuncture treatment [(32)]. Clearly the safety of Chinese medicine needs to be addressed and it be discussed later in this chapter.

1.7 Chinese Medicine Management for Respiratory Disorders

As discussed in earlier in this Chapter, a unique characteristic of Chinese medicine is providing treatment based on syndrome differentiation. A syndrome is the sum of changes within the body, which include the pathogenic factor of the disease (for example, wind, cold., heat,-damp, dryness and fire), location of the disease (such as certain Zang-Fu [1]organ, interior stage, exterior stage, certain meridian) and the features of the disease (for example, cold, heat, deficiency, excess) [(33)]. By taking into account the constitution of the patient, the syndrome is subsequently differentiated such as a heat or cold syndrome [(34)]. The type of treatment (whether acupuncture, herbal medicine, food therapy and physical exercise, alone or in combination) is then determined based on the syndrome differentiation [(33)].

Seasonal allergic rhinitis is chosen to illustrate how Chinese medicine manages a respiratory disorder. In Chinese medicine, seasonal allergic rhinitis is differentiated into wind-cold and wind-heat syndrome depending on the patients' symptom [(35)]. Pathogenic factor wind predominate in spring and may attack the body singly or combine with other pathogenic factor such as cold (i.e. producing wind-cold syndrome) and heat (i.e. resulting wind-heat syndrome) [(36)]. Patients attacked by wind-cold pathogenic factor presented these symptoms: congested nose with overflow of white-watery nasal discharge, sneezing, no feeling thirsty, mild headache and pale complexion. Patients may had similar symptoms (i.e. overflow of white-watery nasal discharge and sneezing) with above syndrome, but additionally had itchy throat, itchy red eyes and mild thirst. This indicated that the patients had wind-heat syndrome [(35)].

[1] Zang Fu : In Chinese medicine, Zang Fu refers to internal organ. Zang organs are Yin in nature and included Heart, Lungs, Spleen, Liver and Kidneys. Fu organs are Yang in nature and comprised of Small Intestine, Large Intestine, Stomach, Gallbladder, Bladder and Triple Burner [(36)].

The principle in treating wind-cold seasonal allergic rhinitis is to expel the pathogenic factor of wind-cold and to reinstate the dispersing and descending function of lung-Qi. Acupuncture points on Fengmen (BL12), Feishu (BL13), Lieque (LU7), Yingxiang (LI20) and Fengchi (GB20) can be applied by using reducing or stimulation techniques. Cupping can be performed on points such as BL-12 and BL-13. The available herbal prescriptions to manage the wind-cold type of seasonal allergic rhinitis include Xiao Qing Long Tang, Cang Er Zi San, Ma Huang Tang, Gui Zhi Tang, Tong Xuan Li Fei Tang, Jia Wei Xiang Su San. Each of these herbal prescriptions tackles different symptoms. For example, Cang Er Zi San which consists of Cang Er Zi, Xin Yi Hua, Bai Zhi and Bo He manages symptom of sneezing better than nasal discharge. Other herbs can be added to a herbal prescription as supplementary treatments to manage specific symptoms [35].

For the wind-heat type of seasonal allergic rhinitis, the treatment principle is to clear the pathogenic factor of wind-heat, and to reinstate the dispersing and descending function of lung-Qi [35]. The commonly used acupuncture points are Fengmen (BL-12), Feishu (BL-13), Hegu (LI-4) and Quchi (LI-11). Acupuncture point Hegu and Quchi are used to clear the pathogenic factor of wind-heat. Sang Ju Yin and Chai Ge Jie Ji Tang are examples of herbal prescriptions for treating the wind-heat type of seasonal allergic rhinitis [35].

The season of occurrence for seasonal allergic rhinitis influences the treatment provision [35]. For seasonal allergic rhinitis that occurs in the pollen season, the focus of the treatment is to clear the pathogenic factor. If the occurrence is other than the summer season, the treatment priority is to treat the root of the condition, namely tonifying the lung and kidney and strengthening the governing vessel [35].

1.8 Issues Related to Chinese Medicine Use

1.8.1 Treatment Outcomes from Chinese Medicine

A review of current literature is necessary to describe the benefits of Chinese medicine treatments, particularly in respiratory disorders. Several systematic reviews have evaluated the outcomes of Chinese medicine as an adjunct to Western medicine in treating respiratory disorders such as the common cold [(18)], asthma [(37)], allergic rhinitis [(38)], COPD [(19)] and severe acute respiratory syndrome [(17)].

The systematic review of the common cold evaluated 17 randomised controlled trials of the outcomes and safety of Chinese herbs compared with placebo, other treatments or with Western medicine [(18)]. The asthma reviews evaluated the outcome of acupuncture in 12 randomised controlled trials [(37)]. Wang and colleagues [(38)] analysed the outcomes of seven Chinese herb clinical trials on allergic rhinitis [(38)]. The systematic review of COPD evaluated 27 randomised clinical trials of oral Chinese herbs, including formula and single herb. The included clinical trials compared the outcomes of Chinese herb treatments with controls (placebo, Western medicine and no treatment) and compared the outcomes of combination Chinese herbs-Western medicine with Western medicine alone [(19)]. The review on severe acute respiratory syndrome focused on comparing the outcome of combination Chinese herbs-Western medicine with Western medicine treatment alone [(17)].

The treatment outcomes of Chinese medicine have been examined in terms of symptom improvement [(17, 37)], comparison of related tests [(37)], Western medicine usage during the study period [(17, 37)] and health-related quality of life survey questionnaires [(19)]. For the common cold, improvement in the duration of time for common cold symptoms was observed. Some of the trials used “fast effect” and “marked effect” to describe recovery of symptoms and fever [(18)]. Symptom improvements were evaluated in allergic rhinitis treatment by summing scores for nasal symptoms (such as runny nose, sneezing, nose block and tickling of nose and eye). The scores were then compared pre- and post-treatment [38]. The use of Western medicine can be monitored to observe if Chinese medicine has an effect on the consumption (i.e., a reduction of use) of Western medicine [17]. The usage can be recorded at baseline and monitored throughout the study period, as average daily dosage, cumulative dosage at treatment completion and treatment duration [17]. The consumption of rescue medicine for asthma can be observed [37]. For the systematic review on COPD, a survey questionnaire was used to analyse patients' perception on their respiratory disorders and their difficulties in performing their daily routine [19].

The trials included in the systematic reviews reported that Chinese medicine had positive effect on respiratory disorders. For example, acupuncture or Chinese herb improved symptoms of severe acute respiratory syndrome [17] allergic rhinitis [38] and common cold [18]; improved quality of life of severe acute respiratory syndrome [17] and COPD [19]; and speeded the clearance of fever and common cold [18]. However, the above systematic reviews could not make a conclusive recommendation on the therapeutic effect of Chinese medicine for these conditions [17-19, 37, 38] due to the risk of potential methodological bias included in the trials. The systematic reviews warrant for more well-design large randomized controlled trials to evaluate the effects of Chinese medicine in managing respiratory disorders.

1.8.2 Disclosure of Western Medicine and Chinese Medicine Use to Health Practitioners

Like many CAM modalities, the use of Chinese medicine can be either alone or in combination with Western medicine [39, 40]. Previous studies have reported that about one in two CAM users do not share information about their CAM treatment with their medical practitioner [41-43]. Sharing information on CAM usage with medical practitioners is important to avoid possible interactions between CAM (particularly herbal preparations) and Western medicines [44], to prevent lowering treatment effectiveness [45] and to assist medical practitioners in providing good health care to patients [46]. Specifically related to Chinese medicine, an example of a possible interaction was a patient taking herbal Dang Gui (*Angelica sinensis)* concurrently with anticoagulation warfarin. The consumed herb may increase the anticoagulation effect which leads to bruising [47]. Medical practitioners are normally the first point of contact in an emergency situation, and having comprehensive details of patients' health information is critical and sometimes can be life-saving. The essential health information includes the patient's health condition, medications and treatments. This information is vital for medical practitioners in selecting suitable treatment approaches for patients.

A systematic review found that the rate of CAM users not communicating their CAM usage to their medical practitioner varied between 35% and 72% [46]. Reasons for patients not communicating CAM and Chinese medicine usage included the fear of rejection from their medical practitioner, belief that it is unnecessary for the medical practitioner to know, and that the medical practitioner did not enquire. The factors which play a role in their decision of non-disclosure included: their personal faith and concern; their previous experience with the medical practitioner; and their wish to have influence their own health care [46].

1.8.3 Safety and Public Acceptance of Chinese Medicine

1.8.3.1 Safety of Chinese Medicine

Due to the now widespread use of Chinese medicine, concerns have been raised about safety including adverse events resulting from treatments [(32)]. There are numerous clinical trials assessing the effectiveness and safety of Chinese medicine in treating common conditions, including respiratory disorders [(17, 38, 48, 49)]. Several systematic reviews of Chinese herbs have summarised the evidence for the treatment effectiveness and adverse effects for the respiratory disorders: allergic rhinitis [(50)], COPD [(48)] and influenza [(49)]. In addition, Chinese medicine has been used to counter the side effects of Western medicine [(24)].

Therapeutic Goods Administration, Australia has defined adverse events as any unexpected symptom or disease following a treatment or use of therapeutic product. The event may not have a cause and effect relationship with the treatment or product [(51)]. Clinical trials included in the systematic reviews have measured adverse events by counting frequency at the end of treatment [(17, 48, 49, 52)]. In a systematic review of Ginseng as a COPD treatment, 12 randomised clinical trials compared oral Chinese herb Ginseng with placebo, no treatment, Western medicine and Chinese herb formula without Ginseng [(48)]. Of the 12 included trials, mild gastrointestinal effects such as bloating, dry mouth, and reduced appetite were reported in one trial, no adverse events were detected in four trials and adverse events were not stated in the remaining seven trials. These reported adverse events did not require medical intervention and resolved naturally within a week [(48)]. In another systematic review by Chen and colleagues [(49)], two randomised controlled trials compared Chinese herbs and Western medicine as treatment for influenza and one study reported gastrointestinal adverse events [(49)]. In another systematic review of seven randomised controlled trials comparing acupuncture with placebo or sham treatment for allergic rhinitis, no adverse events were reported [(50)]. When Chinese herbs were used alone for COPD, no severe adverse events have been detected [(48)] .

The above systematic reviews had no report of severe adverse events [48-50], but reported a few mild gastrointestinal adverse events [48, 49] such as dry mouth, bloating and reduce appetite. In one of the studies, the researchers asserted that there is no significant difference between Chinese herbs and Western medicine in the incidence of adverse events [49]. The investigators further concluded that Chinese medicine is not associated with added adverse event in managing respiratory disorders [48-50]. In conclusion, in order to investigate adverse events related to Chinese herbs, toxicological studies should be perform, to inform the clinicians on the safety of Chinese herbs [52].

1.8.3.2 Public Acceptance of Chinese Medicine

Chinese medicine has been practiced in Australia for many years. The steady increase in the usage of Chinese medicine suggests that Chinese medicine is becoming more accepted in Australia [29, 31]. From a demographic perspective, Australians who prefer Chinese medicine treatment are: female [29, 53], average age of 40 years [29, 39], tertiary educated [29, 39] and born in Asian countries [39].

A number of studies have investigated the common conditions for which patients seek Chinese medicine treatment. In a national survey conducted in 1996, the top four complaints were respiratory disorders (10.8%), neurological disorders (8.7%), gastrointestinal disorders (7.7%) and endocrine disorders (7.7%) [29]. In a 2005 survey conducted in a local community in Melbourne, the conditions which are most commonly treated by Chinese medicine are gastrointestinal and internal disorders (28.4%), followed by respiratory disorders (18.8%) and neurological disorders (17.6%) [39]. For the treatment mode of Chinese medicine, herbs (35.4%) was the most preferred approach followed by acupuncture (20.7%) and physical exercise (20.2%). Impressions of Chinese medicine as having fewer side effects (61.6%), being more beneficial in the long run (42.8%) and being more economical (41.2%) affected patients' decisions to choose Chinese medicine over Western medicine [39].

The acceptance of Australians to Chinese medicine showed when nearly two-thirds of patients (65%) who sought Chinese medicine were first-time users [29]. And compare to referral by medical practitioners or other health practitioners, over four-fifth of patients (83.2%) was recommended by other patients or as a result of advertisement [29]. A more recent national study in 2005 had similar findings: more family and friends (40.8%) suggested patients to pursue Chinese medicine, compared to referral by medical practitioners (20.7%) and other CAM practitioners (18.7%) [31]. These studies suggested that patients are open to Chinese medicine leading to more self-referral for Chinese medicine treatment.

1.9 Rationale for this Study

CAM use is becoming widespread in Australia. Patients, particularly those with chronic disease tend to seek CAM such as Chinese medicine [16, 53] to help alleviate the disease burden and symptoms [16]. Chronic respiratory diseases cause significant morbidity, mortality and economic burden in Australia [2, 8]. Yet information on the common conditions treated by Chinese medicine practitioners is limited, particularly in relation to respiratory diseases and the concerns associated with Chinese medicine treatments.

This project incorporates two distinct yet interrelated tasks to better understand patient usage of Chinese medicine in the Chinese Medicine Teaching Clinic at RMIT University, Melbourne, Australia. There is a specific emphasis on respiratory diseases because these are prevalent in Australia [8]. Data were retrospectively collected from the medical records of all patients who attended the Teaching Clinic in 2010 and 2011. Following the medical record review, a survey questionnaire was administered to all adult patients who had visited the Teaching Clinic for respiratory disorders during the study period. The survey collected information on the patients' knowledge and compliance with Chinese medicine treatments and any adverse events they experienced from the treatments. Information was also sought on concurrent Western medicine usage and disclosure of Chinese medicine treatments to medical practitioners.

To understand the attitudes of this group of patients towards Chinese medicine, it is essential to collect further information to assessing if patients with more knowledge about their treatment are more likely disclose treatments to health providers [43] and comply with their treatment [54] as previously reported. These findings can be used to improve intervention (by incorporating patient education into Chinese medicine practice) to improve patient progress and the clinical learning experience of students. Furthermore, the understanding of the patients' demographic characteristics and behaviour can facilitate the practitioner in incorporating Chinese medicine safely into the patients' existing treatment [53]. The project's findings can also potentially help Chinese medicine practitioners understand patient behaviour and provide insight into how patients interpret information and disclose CAM usage to general practitioners, as well as provide an understanding of adverse events from acupuncture and herbal medicine.

This project collected data on treatment outcomes and adverse events that patients with respiratory diseases experienced during their treatment at the Teaching Clinic. Treatment outcomes were abstracted from student practitioners' assessments of patients' progress, as documented in the medical records. The identification of adverse events from medical records may guide the use of data from medical records to control factors that influence patients' health. By addressing and understanding safety issues, accurate and detailed information can be delivered to Chinese medicine practitioners during their training as well as to patients receiving these treatments.

The Chinese Medicine Teaching Clinic at RMIT University, Bundoora is an available and large resource of Chinese medicine medical records. Examination of these medical records provided important and valuable details such as patient demographics, conditions treated, type of treatment provided, reported adverse events, health care use, and patient progress [55-57]. The findings from this project will be unique because the medical records in the Teaching Clinic have not been analysed since its establishment and there have been very few similar projects undertaken in Australia. Furthermore, the findings may represent the practice of local Chinese medicine in community clinics. In addition, the findings may help improve curriculum design, clinical teaching and medical record documentation. The information generated from this project can be used to develop interventions or guidelines to improve patient safety and to reduce adverse events. Another essential approach toward improving patient safety is improved documentation and design of medical records.

1.10 Research Questions

This research project involved reviewing manual medical records and surveying patients with respiratory disorders. First, the author identified patients with respiratory disorders in the Chinese Medicine Teaching Clinic, RMIT University, by screening through the Teaching Clinic's manual medical records within the study period. This review also delineated general patients and practice in the Teaching Clinic. The associated research questions were:

1. What are the socio-demographics and common conditions presented by the general patients at the Chinese Medicine Teaching Clinic at RMIT University over the two-year study period?
2. What are the adverse events from Chinese medicine treatment reported by the patients in the Teaching Clinic?

In order to examiner Chinese medicine usage in respiratory disorders, further information was extracted from medical records (of patients identified with respiratory disorders), and survey questionnaires were also administered to them. The related research questions were:

3. What are the overall treatment outcomes of Chinese medicine and prescribed t treatment interventions?
4. What are their level of knowledge and compliance with Chinese medicine treatment?

1.11 Organisation of the Thesis

This thesis contains five chapters. Chapter 1 presented: the background of the research project; a general understanding of respiratory disorders; Western medicine and Chinese medicine approaches to the treatment of respiratory disorders; issues related to the use of Chinese medicine for common respiratory disorders; the rationale for this study; and research questions. This thesis is composed of two main studies: the medical records review and the mailed survey.

The research question for this thesis is mainly focused on the quality of care in the Teaching Clinic. Chapter 2 provides a literature review of recent studies assessing quality of care that are based on medical records within outpatient practice. Literature was searched electronically on the PubMed, Scopus, CINAHL, EMmbase and Cochrane databases. From the literature review, the methods, indicator, measurement scale and standards which were used to assess the quality of care are presented and discussed. The literature review also presents the interventions performed to enhance the quality of care and the outcome observed from the implemented interventions. Briefly, this review provides an insight into the process of reviewing medical records and ways to analyse and present the data.

Chapter 3 describes the methods used to review the medical records and findings obtained from analysing data from the medical records. Because the medical records review took place in the RMIT's Chinese Medicine Teaching Clinic, background on this setting is discussed first followed by the methodology for collecting data and identifying patients with respiratory disorders for survey administration. Findings on the patients' demographic profile, medical conditions, adverse events, types of Chinese medicine treatment are discussed in light of earlier published studies on CAM and Chinese medicine at the national level and in community and Teaching Clinic settings. Subsequently findings from patients with respiratory disorders regarding their demographic profile and types of respiratory disorders experienced are discussed. Of particular significance are data on Chinese medicine treatment (focusing on respiratory disorders) in the Teaching Clinic which has not yet been examined before is presented and compared with recent systematic review on that subject. For instance the acupuncture points and Chinese herbs which are commonly prescribed for asthma in Teaching Clinic are characterised.

Chapter 4 focuses on patients with respiratory disorders that were identified in Chapter 3. Survey questionnaire is designed to answer the unmet research questions (particularly related to patients with respiratory disorder) by medical records review (Chapter 3) and later mailed to those identified patients. Key findings in respect of respondents' demographic, disclosure of Chinese medicine and Western medicine usage to health practitioner, overall effect from Chinese medicine, compliance and knowledge in Chinese medicine are discussed. Demographic and behavioural attributes which are associated with a higher number of visits to the Teaching Clinic, better overall effects from Chinese medicine, better compliance and knowledge in Chinese medicine are highlighted and discussed.

Finally, Chapter 5 describes the results in terms of: their implications for end users such as educators, researches and patients; the challenges faced in performing both medical records review and mailed survey; strategies proposed for future implementation; and general conclusion drawn from both studies.

CHAPTER 2. A CRITICAL REVIEW OF MEDICAL RECORD STUDIES

2.1 Introduction

Three of the four research questions for this project evaluate quality of care provided by the Teaching Clinic and data will be abstracted from medical records stored in the Teaching Clinic. The research questions focus on quality of care provided to patients with respiratory disorders, and treatment outcomes and adverse events from the treatment. Before assessing the quality of care in the Teaching Clinic, a review of the literature is necessary to understand the type of, and how to use, data contained in medical records. The review will assist in designing the process for data collection from medical records.

Chapter 2, as extension of Chapter 1, reviews the literature that evaluates quality of care using data abstracted from medical records in outpatient settings. This review includes the indicators, standards and measurement scales that are applied in evaluating quality of care from medical records. Interventions that have been implemented to improve quality of care are included in this review and may benefit the practices in the Teaching Clinic.

2.1.1 Medical Records

Medical records are a type of health record that store information about patients' disease, treatment and management [(58)]. There are two types of medical records: manual and electronic. In manual medical records, all the information is handwritten and paper-based [(59)]. Electronic medical records are computerised and data is stored digitally. Electronic medical records can be categorised as minimally functional or comprehensive. A comprehensive electronic medical records system not only contains a physician's clinical notes, but may also incorporate other functions such as performance reporting and payment procedures [(60)].

Medical records contain administrative, clinical, legal and financial information about patients [(61)]. The type of data documented in medical records differs by institution. Clinical data commonly included in medical records include patients' demographic characteristics, symptoms, physical assessment, medical history, medications history, clinical findings, diagnoses and treatment [(62, 63)].

2.1.2 Quality of Care

To improve the quality of care provided to patients, it is important to first learn the definition of it. Various organisations and individuals have attempted to define the term, and yet the definition of quality of care remains vague. Despite the lack of a widely accepted definition, there are a few definitions which are commonly used in health literature [(64)].

Institute of Medicine suggested definition of "quality of care" as the extent to which providing health care is related to achieving targeted health effects. The provision of health care depends on the up-to-date knowledge of health care providers [(65)]. Although this definition is frequently quoted and acknowledged, many disputes has raised at the point of clinical practice and policy making [(64)]. Steffan proposed a definition which focuses more on the well-being of patients, which is the ability of health care to reach medical or non-medical targets [66]. A recent definition suggested by an US institution, the Agency for Healthcare Research and Quality is:

> We know that quality means different things to different people. Some people think that getting quality health care means seeing the doctor right away, being treated courteously by the doctor's staff, or having the doctor spend a lot of time with them. While these things are important to all of us, clinical quality of care is even more important. Think of it like this: getting quality health care is like taking your car to a mechanic. The people in the shop can be friendly and listen to your complaints, but the most important thing is whether they fix the problem with your car[67].

This definition agrees that individuals hold different meanings of quality of care, yet the quality of disease management and treatment is of utmost importance. This definition has been adopted for this thesis because it emphasises the necessity for every health care visit to comply with the clinical practice benchmark [64].

Rossi and colleagues [68] stated that the evaluation of quality of care is essential because it serves as foundation for the ongoing assessment of current practice, promotes process improvement and decreases practice disparity. By evaluating quality of care, the effect of implemented interventions can be assessed [69]. Quality of care can be assessed based on structural data, process data or outcome data. Structural data incorporates the features of staff and the health care facility. Process data describes the interactions between health care providers and patients, for example, measuring patients' blood pressure. Outcome data relates to the changes in patients' health status following treatment, for example, blood pressure level of patients [70]. Based on abstracted data, the quality of care provided can be compared with quality standards.

Quality standards can help researchers decide what data or indicators need to be abstracted to assess quality of care. Quality standards can be classified as empirical standards or normative standards. Empirical standards are established from actual practice in certain settings [71]. For example, the pattern of medication usage in an outpatient clinic was used as a standard to monitor the practice of another outpatient clinic. The application of empirical standards is suitable when comparing the medical care provided in one practice with the medical care in another, or when well-defined normative standards are not available. A normative standard is the standard of knowledge and practice gathered from authoritative sources such as textbooks or a committee of medical practitioners. Normative standards usually describe a high level of medical care[71] .

A number of sources of data are available for evaluating quality of care such as medical records, survey questionnaires and the direct observation of interactions between patients and health care practitioners [71]. Each of these data sources have their own advantages and drawbacks, and the choice of sources also depends upon the purpose of the evaluation [70]. This review focuses on the use of medical records in assessing quality of care since information on: diagnostic tests, consultations, procedures and treatments provided within the healthcare institution are usually documented in medical records..

2.2 Methodology

2.2.1 Criteria for this Review

2.2.1.1 Type of Studies

The databases were searched regardless of studied disease of interest, although only studies used medical records as a tool to evaluate quality of care were included in this review. This review provides literature background for the next project component, i.e. medical record review in a Chinese medicine teaching clinic. Thus this review focuses on studies conducted in an outpatient setting, such as outpatient clinics of hospitals, academic medical centres, specialised care centres and primary care clinics. Observational studies such as cross-sectional and cohort studies were included because disease pattern or treatment practice of real-world Chinese medicine can be discovered from observing the medical records (72). The findings from observing medical record review could inform Chinese medicine practitioners for better clinical decision making (72). Because this review focuses on recent studies, only studies published from 2003 onwards were included.

2.2.1.2 Type of Participants

Studies of both adults and children were considered. There was no limitation on the disease studied.

2.2.1.3 Types of Interventions

The studies of interest were either solely observational or incorporated interventions to improve the quality of care. Interventions could have been in the form of: education program, applying new policies or work processes; or promoting adherence to guidelines for disease management. For studies evaluating interventions, the quality of care at baseline and post-intervention was compared.

2.2.1.4 Types of Outcome Measures

The reviewed outcome measures were those reflecting the quality of care on the studied disease. Outcome measures describe the: assessment, management or progress of disease; use of health care services (such as consultations with the health practitioner and hospitalisation); assessment of complications from disease or lifestyle; and the safety of the treatment.

2.2.1.5 Exclusion Criteria for this Review

Although randomised controlled trials and controlled clinical trials have a high ranking in the hierarchy of evidence, conducting these Chinese medicine trials are difficult because of the complexity of treatment and diagnosis [72]. Thus, this review excluded randomised controlled trial and controlled clinical trial studies. Case-control study or case series were excluded because their lower ranking in the hierarchy of evidence.

Studies without full publication in English and conference paper were excluded because further needed information on their methodology and findings were irretrievable. Author also excluded systematic review and meta-analysis as this review would explore on the method of examining quality of care, thus single study is required. Studies which combined medical records review with another method (such as questionnaire or interview) were also excluded.

2.2.2 Search Methods in Identifying Studies

A list of search term was collated for the literature search in the Medline database and its search strategy as attached in Appendix A. The focus of the search was studies of medical record review in an outpatient setting. The MeSH terms for medical records included "medical record", "medical records systems, computerized", "health records, personal" and "electronic health records". For outpatient settings, the MeSH terms were "outpatients" and "outpatients clinic, hospital".

A search was initially performed on Medline and the search strategies were later modified to be used in other electronic databases: Scopus, CINAHL, Embase and Cochrane electronic databases. Additional relevant free text words were identified and included in the searches. The databases were searched for journal articles published in English. Bibliographic searches were not performed; however the later discussion section could include studies prior 2003 when it was relevant to the result and was cited by the included studies.

2.2.3 Data Collection and Analysis

2.2.3.1 Selection of Studies

The title or abstracts (if available) of journal articles identified in the literature searches were screened to identify potentially relevant studies for full-text review. The studies that satisfied the criteria as specified in Section 2.2.1 were included in the review.

2.2.3.2 Data Extraction and Management

Data on study method, study findings, conclusion and study limitation were extracted from the included studies. Study method describes the study location and setting, disease of interest, sources of data, types of data assessed, observed indicator and standards employed to evaluate quality of care and interventions implemented. The study findings described improvement in quality of care. The included studies were grouped according to the outcomes measured for assessing quality of care.

2.3 Results

2.3.1 General Information on Included Papers

The initial search yielded 6,895 studies. Following the screening of the abstracts, the majority of the articles were excluded because they were not quality of care studies or had used a clinical trial study design. The remaining 24 full-text articles were retrieved for detailed evaluation (Figure 2-1). The final number of included studies was 24, and their main characteristics are summarised in Table 2-1.

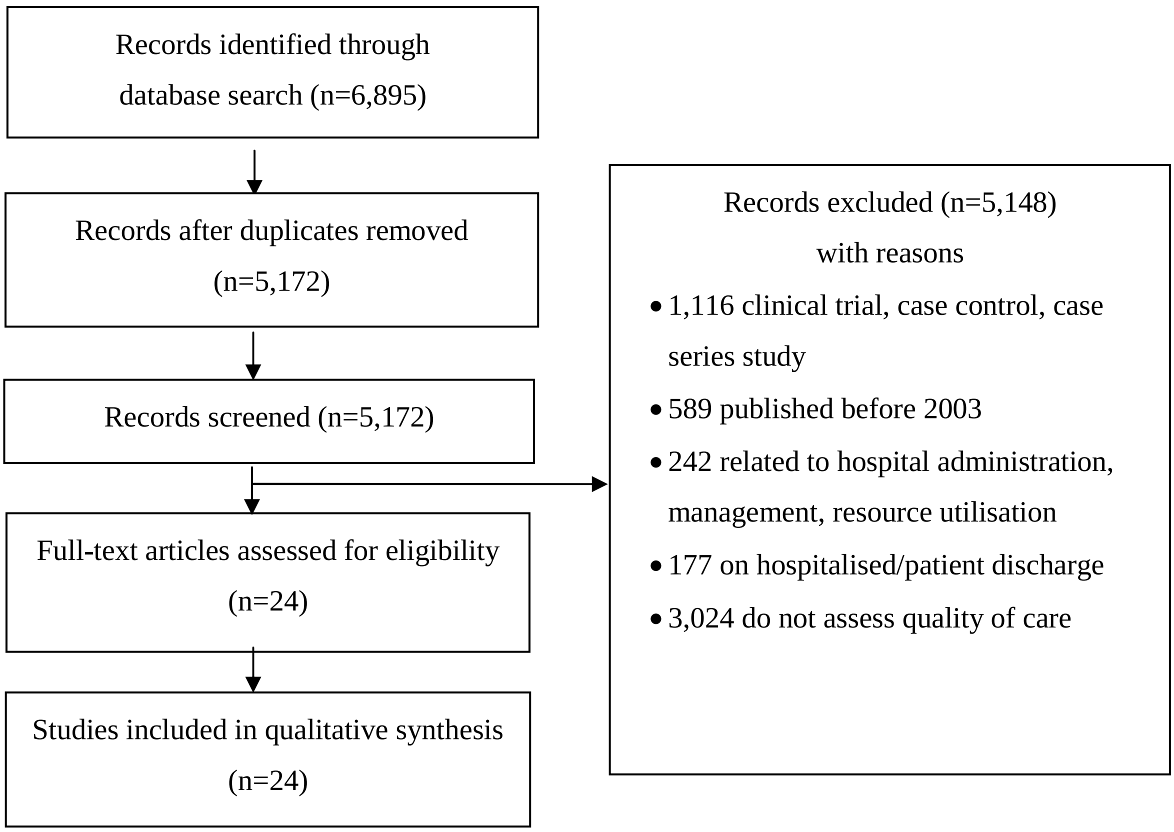

Figure 2-1 Flow diagram of review

Table 2-1 summarises the characteristics of the included studies, source of data and type of assessed data. For source of retrieving data, the types of medical records screened (for instance manual or electronic medical records or even both) and other supplementary data collection tool (such as lab assessment, claims data and administrative data) were recorded. Although this review had intended to include studies using medical record to abstract data, issues where not all medical records were well-documented (71), restricted the data collected. Therefore, other data collection tools (for example, questionnaires) or data sources (for example, administrative data, claims data) were used to complement data collection from the medical records. In appraising quality of care, different types of data (structural, process and outcome data) can be assessed to reflect the different aspects of quality of care. It would be interesting to observe what kinds of data are commonly abstracted.

The studies included in this review were mostly from the United States (n=18), with one each from: Bahrain, Tunisia, Denmark, Italy, Switzerland and Taiwan. Primary care clinics (n=6) and academic medical centres (n=6) were the most commonly studied settings, followed by studies in hospital outpatient clinics (n=5); combination of primary care clinics and hospital outpatient clinics (n=3); specialised care centre (n=1); and combination of primary care clinic, hospital outpatient clinic and academic medical centre (n=1). Two studies did not specify the study setting (Table 2-1).

Almost two-fifth of the studies (n=9, 37.5%) used electronic medical records (68, 73-80) with only one study using manual medical records (81). Of the nine studies using electronic medical records, two studies were performed at a national level (using a national network of electronic medical records to extract data (74, 75)) and two studies used a combination of both electronic medical records and manual medical records (69, 82). The remaining 12 studies did not specify the type of medical records (83-94) (Table 2-1).

Of the 24 included studies, one third investigated quality of care on in diabetes patients (n=8) [68, 74, 76, 81, 88, 89, 91, 92]. Other diseases studied include cardiovascular disease (n=7) [75, 77, 78, 82, 85, 87, 93], respiratory disease (n=2) [73, 83], cancer (n=2) [69, 84], HIV [86], insomnia [90], surgery [94], pain [80] and child care [79] (Table 2-1).

In terms of type of data assessed in evaluating quality of care, all studies measured process data (n=24), while 67% measured outcome data (n=16) [68, 73-76, 81, 82, 86-94] and 21% measured structural data (n=5) [81, 91-94] (Table 2-1). A combination of process and outcome data were collected by 45% of the studies (n=11) [68, 73-76, 82, 86-90], 33% focused only process data (n=8) [69, 77-80, 83-85] and 21% assessed structural, process and outcome data concurrently (n=5) [81, 91-94] (Table 2-1).

Table 2-1 Type of data assessed in included studies

No.	Author, year, country	Study setting (number of medical records reviewed)	Study topic	Sources of data	Types of data assessed		
					Structural data [a]	Process data [b]	Outcome data [c]
1	Al-Khaja, 2005, Bahrain	Primary care clinics (n=357)	Diabetic hypertensive	Manual medical records, lab assessment	√	√	√
2	Grisel, 2009, US	Academic medical centre (n=486)	Surgery	Medical records, questionnaire, census data	√	√	√
3	Lafata, 2004, US	Primary care clinics (n=566)	Congestive heart failure	Medical records	√	√	√
4	Wang, 2009, Taiwan	Academic medical centre (n=2,038)	Diabetic	Medical records	√	√	√
5	O'Connor, 2008, US	Primary care clinics (n=2,589)	Diabetes	Medical records	√	√	√
6	Bunik, 2011, US	Academic medical centre (n=1,797)	Asthma	Electronic medical records , administrative data	---	√	√
7	Elger, 2004, Switzerland	Primary care clinics (n=112)	Insomnia	Medical records, questionnaire	---	√	√
8	Gill, 2006, US	Primary care clinic and hospital outpatient clinic (n=10,572)	Diabetes	Electronic medical records	---	√	√
9	Gill, 2008, US	Primary care clinic and hospital outpatient clinic (n=1,385,242)	Hyperlipidaemia	Electronic medical records	---	√	√
10	Harris, 2009, US	Unspecified (n=15,247)	Diabetes	Electronic medical records, administrative data	---	√	√
11	Harzallah, 2004, Tunisia	Academic medical centre (n=593)	Diabetes	Medical records	---	√	√
12	Lee, 2010, US	Hospital outpatient clinic (n=364)	Diabetes	Medical records	---	√	√
13	Meehan, 2006, US	Primary care clinics (n=7,110)	Cardiovascular care	Medical records	---	√	√

[a] Features of health care professionals, hospitals and patients, such as type of facility, and qualifications of healthcare professional [(70)].
[b] Data that show the interaction between health care professional and patients, such as examination or test carried out by medical practitioners [(70)].
[c] Patients' progress following treatment, such as patients' recovery, satisfaction towards provided treatment or service [(70)].

Table 2-1 Type of data assessed in included studies (continued)

No.	Author, year, country	Study setting (number of medical records reviewed)	Study topic	Sources of data	Types of data assessed		
					Structural data [a]	Process data [b]	Outcome data [c]
14	Rossi, 2008, Italy	Hospital outpatient clinics (n=114,249)	Diabetes	Electronic medical records	---	√	√
15	Wilson, 2007, US	Primary care clinic, hospital outpatient clinic, academic medical centre clinic (n=9,020)	HIV	Medical records	---	√	√
16	Garwood, 2008, US	Academic medical centre (n= 40)	Warfarin therapy	Electronic medical records, manual medical records, questionnaire	---	√	√
17	Baker, 2007, US	Hospital outpatient clinic (n=517)	Heart failure	Electronic medical records	---	√	---
18	Bertoni, 2004, US	Primary care clinics (n=1,613)	Heart failure	Electronic medical records, claims data	---	√	---
19	Dy, 2011, US	Academic medical centre (n=238)	Cancer	Electronic medical records, manual medical records	---	√	---
20	Goff Junior, 2005, US	Unspecified (n=3,141)	Heart failure	Medical records, claim data	---	√	---
21	Jacobsen, 2010, US	Specialized care centre (n=1,660)	Cancer	Medical records	---	√	---
22	Lange, 2009, Denmark	Hospital outpatient clinics (n=1,868)	COPD	Medical records	---	√	---
23	Mangione-Smith, 2007, US	Primary care clinic and hospital outpatient clinic (n=1,553)	Child care	Electronic medical records	---	√	---
24	Mularski, 2006, US	Hospital outpatient clinic (n=600)	Pain	Medical records	---	√	---
				Total	5	24	16

[a] Features of health care professionals, hospitals and patients, such as type of facility, and qualifications of healthcare professional [70].
[b] Data that show the interaction between health care professional and patients, such as examination or test carried out by medical practitioners [70].
[c] Patients' progress following treatment, such as patients' recovery, satisfaction towards provided treatment or service [70].

2.3.2 Study Design, Method and Findings

2.3.2.1 Method in Assessing Quality of Care

The study methods, in terms of indicators, standards and measurement scales used to evaluate quality of care and the key findings on quality of care are summarised in Table 2-2. The indicators of quality of care varied according to the studied disease. Standards used to assess indicators were empirical standards, normative standard or both. The choice of indicators depended on standards used to assess quality of care. The scales used to measure the selected indicators were numerical, nominal and ordinal scale.

For the standards applied to rate the medical care, most studies (n=16) use normative standards [73-75, 77-80, 82, 83, 85, 87-90, 93], followed by empirical standards (n=3) [69, 76, 94] and a combination of both standards (n=5) [68, 81, 86, 91, 92] (Table 2-2). Variation in quality of care was reported in seven studies, including those that used a range of quality indicators [69, 84], were conducted in a large number of medical care facilities [68, 74, 75, 86] and where quality of care can varied at the patient level [91]. More studies concluded that medical care was inadequate (n=6) [79-81, 83, 89, 90] than those that stated the quality of care provided was adequate (n=4) [77, 78, 88, 93]. Improvement in medical care was reported by three studies [73, 85, 87]. In a study of anticoagulation care, a decrease in the quality of medical care was seen when stabilised patients were discharged from pharmacist-managed to physician-managed anticoagulation care [82]. One study reported that there was no change in diabetes care with application of electronic patient-provider messaging [76]. Another study found that an ambulatory centre provided better quality care than a hospital-based facility [94]. Interestingly, a study on diabetic patients found that quality of care was affected by the number of patient visits [92] (Table 2-2).

Table 2-2 Method and findings of quality of care assessment

No.	Author (year)	Standards used in assessing quality of care		Measurement scales used	Findings on quality of care
		Empirical [a]	Normative [b]		
1	Al-Khaja (2005)	Yes	Yes	Ordinal scale, nominal scale, numerical scale, percentage, mean ±*SD*, chi-square	Quality of care was inadequate and no difference between different settings
2	Baker (2007)	No	Yes	Nominal scale, numerical scale, score performance (proportion), percentage	Quality of care was adequate
3	Bertoni (2004)	No	Yes	Ordinal scale, nominal scale, score performance (proportion), percentage	Highly adhered to practice guideline
4	Bunik (2011)	No	Yes	Numerical scale, percentage, adjusted and unadjusted risk ratio	Quality of care improved
5	Dy (2011)	Yes	No	Nominal scale, score performance (percentage)	Quality of care varied
6	Elger (2004)	No	Yes	Ordinal scale, numerical scale, nominal scale, percentage, odds ratio, chi-square	Quality of care was inadequate
7	Garwood (2008)	No	Yes	Ordinal scale, numerical scale, percentage, mean ±*SD*, median	Quality of care decreased
8	Gill (2006)	No	Yes	Nominal scale, numerical scale, percentage	Quality of care varied across studied facilities
9	Gill (2008)	No	Yes	Ordinal scale, nominal scale, numerical scale, odds ratio	Quality of care varied across studied facilities
10	Goff Junior (2005)	No	Yes	Ordinal scale, nominal scale, score performance (proportion)	Quality of care improved

[a] Standards established from actual practice in certain settings, such as the pattern of medication usage in an outpatient clinic was used as a standard another outpatient clinic [(71)].

[b] Standard of knowledge and practice gathered from authoritative sources such as textbooks or a committee of medical practitioners [(71)] .

Table 2-2 Method and findings of quality of care assessment (continued)

No.	Author (year)	Standards used in assessing quality of care		Measurement scales used	Findings on quality of care
		Empirical [a]	Normative [b]		
11	Grisel (2009)	Yes	No	Numerical scale, ordinal scale, rate, percentage	Quality of care in ambulatory centre was better than hospital-based facility
12	Harris (2009)	Yes	No	Ordinal scale, numerical scale, percentage, mean ±*SD*, relative risk	Quality of care was inconclusive
13	Harzallah (2004)	No	Yes	Nominal scale, ordinal scale, percentage, mean ±*SD*	Quality of care was inadequate
14	Jacobsen (2010)	No	Yes	Nominal scale, performance rates (percentages), odds ratio	Varied adherence to quality indicators
15	Lafata (2004)	No	Yes	Numerical scale, nominal scale, ordinal scale, percentage, risk ratio	Similar quality of care across ethnic groups
16	Lange (2009)	No	Yes	Nominal scale, percentage, odds ratio	Quality of care was inadequate
17	Lee (2010)	No	Yes	Numerical scale, nominal scale, percentage, mean ±*SD*	Similar quality of care across ethnic groups
18	Mangione-Smith (2007)	No	Yes	Nominal scale, performance rate (percentage)	Quality of care was inadequate
19	Meehan (2006)	No	Yes	Nominal scale, performance rate (percentage), odds ratio	Quality of care improved
20	Mularski (2006)	No	Yes	Nominal scale, ordinal scale, performance rate (percentage), relative risk ratio	Quality of care was inadequate

[a] Standards established from actual practice in certain settings, such as the pattern of medication usage in an outpatient clinic was used as a standard another outpatient clinic [(71)].

[b] Standard of knowledge and practice gathered from authoritative sources such as textbooks or a committee of medical practitioners [(71)] .

Table 2-2 Method and findings of quality of care assessment (continued)

No.	Author (year)	Standards used in assessing quality of care		Measurement scales used	Findings on quality of care
		Empirical [a]	Normative [b]		
21	O'Connor (2008)	Yes	Yes	Numerical scale, ordinal scale, performance rate (percentage)	Quality of care varied at patient level
22	Rossi (2008)	Yes	Yes	Nominal scale, numerical scale, performance rate (percentage), mean ±*SD*	Quality of care varied across studies facilities
23	Wang (2009)	Yes	Yes	Nominal scale, numerical scale, performance rate (percentage), mean ±*SD*	Patient volume affects the quality of care
24	Wilson (2007)	Yes	Yes	Nominal scale, numerical scale, performance rate (percentage), proportions	Quality of care varied across studies facilities
	Total	8	21		

[a] Standards established from actual practice in certain settings, such as the pattern of medication usage in an outpatient clinic was used as a standard another outpatient clinic [(71)].

[b] Standard of knowledge and practice gathered from authoritative sources such as textbooks or a committee of medical practitioners [(71)] .

2.3.2.2 Interventions to Improve Quality of Care

Table 2-3 describes the interventions that were implemented and their effect on medical care. Each intervention was incorporated as an attempt to improve quality of care. Of 24 studies, seven compared the outcome measures between pre- and post-intervention. Most interventions resulted in improvements in medical care (n=4, 57%) (73, 83, 85, 87), while one was inconclusive (76) and two had no effect on quality of care (80, 82).

The interventions that had either no effect or an inconclusive effect on quality of medical care were: discharging stabilised patients from an pharmacist-managed anticoagulation clinic (82); having patients use electronic messaging to communicate with healthcare providers (76) and assessment for pain condition (80). Interventions that led to improvement in medical care were: incorporating educational program; reminders on medical care to healthcare providers and patients; refining documentation of medical records; producing a performance report to the healthcare provider; and encouraging compliance to disease management guidelines.

Table 2-3 Assessed improvement in quality of care and implemented interventions in the studies

No.	Author (year)	Improvement in quality of care [a]	Intervention implemented in the studies
1	Bunik (2011)	Yes	Offer educational session to health care providers and patients Administer pre-visit history questionnaire for patients Provide reminders to health care providers on asthma-related visit Electronic medical records templates and forms Encourage patients to attend follow-up in outpatient clinic Encourage medical practitioners to refer patients to specialists when necessary
2	Garwood (2008)	No	Discharge patients from pharmacist-managed anticoagulation clinic
3	Goff Junior (2005)	Yes	Distribute summary of guideline to healthcare providers Provide performance report to involved medical practitioners Provide reminders for medical practitioners on disease management Provide educational program to patients
4	Harris (2009)	Inconclusive	Implement electronic patient-provider messaging
5	Lange (2009)	Yes	Offer educational program on guideline of disease management to medical practitioners and nurses
6	Meehan (2006)	Yes	Provide reminders for patient and physician of recommended service Provide education materials to patients and physicians Provide documentation materials to patient and physicians Provide performance report to involved physicians Provide personal digital assistants to physicians
7	Mularski (2006)	No	Implement new assessment for pain conditions

[a] Improvement in quality of care was not assessed in other 17 studies: Al-Khaja (2005), Baker (2007), Bertoni (2004), Dy (2011), Elger (2004), Gill (2006), Gill (2008), Grisel (2009), Harzallah (2004), Jacobsen (2010), Lafata (2004), Lee (2010), Mangione-Smith (2007), O'Connor (2008), Rossi (2008), Wang (2009), Wilson (2007).

2.3.2.3 Scale Measurements Used

The measurement scales that can be used to assess quality of care indicators are: nominal, numeric and ordinal. The studies that used a nominal scale generally counted numbers such as the numbers of patients who received or did not receive the intervention. Numerical scales are used for quantitative observations such as weight, height and laboratory values. Using an ordinal scale, observations are categorised or ranked in an order, for example, the Likert scale which was used to measure patients' satisfaction [95].

The details of the scales used to measure the indicators of quality of care are shown in Table 2-4. Most studies used nominal scales (n=19), followed by numerical scales (n=15) and ordinal scales (n=12). Of 24 studies, two studies applied all three measurement scales in their studies [81, 93] (Table 2-4).

Table 2-5 gives further details of the ordinal scales used in 12 studies, in terms of the purpose and number of categories. Ordinal scales are used to: classify disease in three studies, rank the disease management in three studies, assess patient satisfaction in two studies, measure patient progress following treatment in two studies and measure the risk mortality of patients in two studies.

Table 2-4 Usage of scale of measurement to assess the indicators

Measurement scale (n=24 studies)	Studies uses the scales of measurement		Description
Nominal scale (n=19 studies)	1. Al-Khaja (2005) 2. Baker (2007) 3. Bertoni (2004) 4. Dy (2011) 5. Elger (2004) 6. Gill (2006) 7. Gill (2008) 8. Goff Junior (2005) 9. Harzallah (2004) 10. Jacobsen (2010)	11. Lafata (2004) 12. Lange (2009) 13. Lee (2010) 14. Mangione-Smith (2007) 15. Meehan (2006) 16. Mularski (2006) 17. Rossi (2008) 18. Wang (2009) 19. Wilson (2007)	Count number of the occurred event
Numerical scale (n=15 studies)	1. Al-Khaja (2005) 2. Baker (2007) 3. Bunik (2011) 4. Elger (2004) 5. Garwood (2008) 6. Gill (2006) 7. Gill (2008) 8. Grisel (2009)	9. Harris (2009) 10. Lafata (2004) 11. Lee (2010) 12. O'Connor (2008) 13. Rossi (2008) 14. Wang (2009) 15. Wilson (2007)	A scale that measure quantitatively
Ordinal scale (n=12 studies)	1. Al-Khaja (2005) 2. Bertoni (2004) 3. Elger (2004) 4. Garwood (2008) 5. Gill (2008) 6. Goff Junior (2005)	7. Grisel (2009) 8. Harris (2009) 9. Harzallah (2004) 10. Lafata (2004) 11. Mularski (2006) 12. O'Connor (2008)	A scale that group observations into categories or rank the order

Table 2-5 Description of ordinal scale used in the studies

No.	Studies	Purpose the ordinal scale	Number of categories used in the ordinal scale
1	Al-Khaja (2005)	To rank the order commonly used medication	1 to 5
2	Bertoni (2004)	To classify heart failure	3 – systolic dysfunction, mild systolic dysfunction, normal systolic dysfunction
3	Elger (2004)	To classify patient progress	4 – complete, partial, no or no known improvement
4	Garwood (2008)	To assess patient satisfaction using Likert scale	1 (poor) to 5 (excellent)
5	Gill (2008)	To classify cardiovascular risk	3 – high-, moderate-, and low risk
6	Goff Junior (2005)	To classify heart failure	3 – moderate-to-severe, mild, preserved systolic function
7	Grisel (2009)	To assess patient satisfaction using Likert scale	0 (poor) to 10 (excellent)
8	Harris (2009)	To classify message thread	5 – non-verified, 0 thread, 1-3 threat, 4-12 thread, ≥ 12 thread
9	Harzallah (2004)	To classify glycemic control	3 – < 6.6%, 6.6-8%, >8%
		To classify body mass index	4 – < 22kg/m^2, 22-25 kg/m^2, 25-30 kg/m^2, ≥ 30 kg/m^2
10	Lafata (2004)	To assess the patients' risk of mortality by adding up patients' comorbidity score	Charlson comorbidity index
11	Mularski (2006)	To assess pain management using pain composite scores, by adding indicators from evaluation, treatment or observing pain	0 to 3
12	O'Connor (2008)	To assess the patients' risk of mortality by adding up patients' comorbidity score	Charlson comorbidity index

2.3.2.4 Indicators of Quality of Care

The indicators of care observed in the 24 studies were grouped into 14 categories and are summarised as in Table 2-6. Almost all studies (n=20) used "disease assessment" as indicator to reflect the quality of medical care, while the indicator "medication usage" was used lesser than "disease assessment" (n=16).

Table 2-6 Indicator used to assess quality of care

Indicator	Number of studies	Studies
Disease assessment (include level of blood pressure, glycaemic, lipid)	21	Al-Khaja (2005), Baker (2007), Bertoni (2004), Bunik (2011), Dy (2011), Garwood (2008), Gill (2006), Gill (2008), Goff Junior (2005), Harris (2009), Harzallah (2004), Jacobsen (2010), Lange (2009), Lee (2010), Mangione-Smith (2007), Meehan (2006), Mularski (2006), O'Connor (2008), Rossi (2008), Wang (2009), Wilson (2007)
Medication usage	16	Al-Khaja (2005), Baker (2007), Bertoni (2004), Bunik (2011), Dy (2011), Elger (2004), Gill (2006), Gill (2008), Goff Junior (2005), Harzallah (2004), Lafata (2004), Lee (2010), Meehan (2006), O'Connor (2008), Wang (2009), Wilson (2007)
Hospitalization / Outpatient visit / follow up visit	6	Bunik (2011), Elger (2004), Garwood (2008), Harris (2009), Lafata (2004), O'Connor (2008)
Disease management [a]	5	Jacobsen (2010), Lange (2009), Mangione-Smith (2007), Mularski (2006), Wilson (2007)
Lifestyle assessment and/or management	3	Lafata (2004), Lange (2009), Meehan (2006)
Complication assessment	3	Harzallah (2004), Lee (2010), Rossi (2008)
Patient satisfaction	2	Garwood (2008), Grisel (2009)
Treatment plan	2	Bunik (2011), Dy (2011)
Disease progress	1	Elger (2004)
Anthropometry	1	Al-Khaja (2005)
Risk assessment	1	Harzallah (2004)
Safety event, treatment timeliness and resource usage	1	Grisel (2009)
Survival time	1	Lafata (2004)

[a] Include screening of disease, prophylaxis treatment, vaccinations, and referral to further treatment.

2.4 Discussion

2.4.1 Study Design, Method and Findings

This review has concentrated on cross-sectional study design that is suitable to be conducted clinic setting. Cross-sectional design is fitted for studies that have time and fund constraint; and suitable for setting where the studied disorder or management are common and able to recruit several hundred study participants [(96)]. Other study design, such as clinical trials, require extensive of resources and because participants in a clinical trial may not representing the clinic patients population. Clinical trials usually require participants who have satisfied stringent inclusion criteria, and these eligible participants may represent only a subset of the patients in an real-world clinical setting [(97)].

Studies of end-of-life care [(69)] and care of children [(79)] used a range of quality indicators. For example, Mangione-Smith and colleagues studied different aspects of care in children, including: type of care (preventive, acute, chronic conditions), functions of care (screening, diagnosis, treatment and follow-up), clinical area (e.g., acne, asthma, depression) and mode of care (e.g., laboratory test, medication, vaccination) [(79)]. The studies discussed above assess a range of quality indicators, and although the quality of care varied across the indicators, examining different aspects of care was beneficial in identifying the areas of care that have been emphasised in practice (such as management of upper respiratory tract infection) and areas that were overlooked (for example preventive services for adolescents). These findings could assist in improving areas of care that were inadequate by identifying and formulating remedial measures. As summarized in Table 2-3, implementing remedial measures (such as educational session to health care providers, electronic medical records templates) to address identified inadequate care have improved the targeted areas of care such as better assessment [(83, 85, 87)] and management of disease [(73, 83, 85, 87)] and lower unplanned hospital visit [(73)].

For studies that included different types of health care facilities and were performed on a large-scale, the quality of care were inconsistent, and not all of the measured indicators meet the national guidelines [74, 75, 86]. A high rate on one indicator is not necessarily reflected on other indicators. For example, although 95% of patients had at least one blood pressure measurement, only 28% had blood pressure under control (<130/80 mmHg) [74]. Nonetheless, from large-scale studies, factors (such as administrative or clinical systems) which contribute to high quality of care can be identified [86].

This review has identified quality of care indicators that are needed to answer research questions (such as those in Chapter 1.10). For patients with respiratory disorders, data which are readily available and can be abstracted from the medical records include details of Chinese medicine treatment, student practitioners' assessment of patients and patients' lifestyle. These data can be used as indicators for quality of care in the RMIT's Chinese Medicine Teaching Clinic.

In medical records, student practitioners are required to document the type of Chinese medicine treatment (whether patients received acupuncture, herb, and/or other treatment) and specific details about the treatment (such as types of acupuncture point used and herbs prescribed to patients). Student practitioners also need to document their assessments of patients in medical records, and this assessment can be used as an indicator of treatment outcome. In the Teaching Clinic, patient assessments such as energy, sleep, appetite, and excretion (including bowel motions and urination) are routinely observed or inquired about by the student practitioners.

Although disease assessment and medication usage are the most frequently used indicators in the studies in this review (Table 2-6), other information documented in the Teaching Clinic's medical records such as patients' lifestyle and practitioners' advice on lifestyle (which are related to their disorder) can be used as indicators of quality of care in patients with respiratory disorders. Because Chinese medicine treatment focuses on holistic and reviving the body's balance approach, the practitioners may provide lifestyle advice such as physical activity and Chinese-medicine-based dietary advice (20). Example of advice on physical activity are promoting patients to balance between work and rest and encouraging patients to do physical exercise ore relax. Practitioners could provide dietary advice such as eating cooked food, eat and drink warm food and drink and eat a range of food (98).

In order to use adverse events as quality indicators, the occurrence and nature of the adverse events and also student practitioners' responses to the adverse events can be obtained from the medical records.

2.4.2 Application of Structural, Process and Outcome Data

In general, indicators of quality of care are used to reflect the provision of medical care. Indicators are classified as structural, process and outcome data. For example, assessment of the presence of disease can either be process or outcome data. Process data records whether measurements, such as blood pressure or lipid profiling, are being carried out. Outcome data assesses changes in patients' health status post-treatment such as patients' quality of life, satisfaction, or lipid profile.

The selection of an indicator depends upon the standard which has been chosen. Normative standards (for example, management guidelines for a disease) consist of a range of indicators for quality of care. The guidelines comprise appropriate treatment (what treatment should or should not be provided to patients) [(78)] as well as the assessment and management of lifestyle [(99)]. In a study evaluating quality of COPD care, aspects of the patients' lifestyle including body mass index, smoking status and advice (i.e., smoking cessation, nutritional advice) were examined because these can affect the clinical outcome on patients [(83)].

As discussed earlier, all of the studies in this review abstracted process data from medical records to assess quality of care. Process data is more responsive in evaluating quality of care because poor outcomes are not necessarily the result of error in medical care; patients may have poor outcome even though they received good quality medical care [(70)]. Furthermore, from the point of view of healthcare providers, patients with regular follow-up are more likely to receive medical care and these patients are therefore more likely to have a favourable medical outcome. However, by only focusing on upgrading process of care, the cost of medical care may escalate without any observable health progress for patients [(70)].

Analysing patients' experience (i.e. outcome data) is beneficial for health institutions in: assessing health providers' performance; gathering and reacting to their clients' viewpoint

[100]; and providing more accurate measurement of quality of care [71]. Although outcome data is the most precise for establishing the quality of medical care, outcome data is less preferred than process data for several reasons. A number of other factors may affect the health outcome; health outcome is not attributable to process of care alone. Some outcomes, for example, patients' beliefs, are difficult to quantify because they are not well-defined [71]. Additionally, some outcomes may require a long period of time to become apparent, for example survival time [93].

Assessing structural data in evaluating medical care is helpful for relating the characteristics of the health care facility and/or health practitioner with the observed processes of care or health outcomes. Structural data can include the sufficiency of equipment, as well as the specialties and experience of health practitioners [71]. For example, a study of diabetes patients compared the quality of care provided by endocrinologists and non-endocrinologists [92].

In answering this thesis's research questions, data on the quality indicators identified in Chapter 2.4.1 (such as Chinese medicine treatment, patient assessments and occurrence of adverse events) were collected from medical records in the RMIT's Chinese Medicine Teaching Clinic. The abstracted process data from the medical records were Chinese medicine treatment and patients' lifestyle assessment and/or management. Treatment outcomes and occurrence of adverse events were collected as outcome data. The abstracted structural data included the demographic characteristics of patients. This structural data may be helpful in relating the pattern of patients' visits to the Teaching Clinic with patients' demographic characteristics. Because guidelines on Chinese medicine treatment are not readily available, the quality of care provided in the Teaching Clinic was compared with available literature (i.e., empirical standards).

2.4.3 Intervention to Improve Quality of Care

Intervention following baseline medical record review improved quality of care at the end of some of the reviewed studies [73, 83, 85, 87]. The interventions that can improve the quality of care include using templates in medical records, reminders for care of disease, and educational program to health care providers and patients.

Medical record templates assist physicians to document patients' visits in an organised manner. The benefits of templates include the ability to trace the physicians' compliance with guidelines for disease assessment and management, and to improve prescribing practices [55, 101]. Reminders for care of disease can be incorporated into electronic medical record system to remind patients to attend the follow-up [73], reminding patients to discuss disease care with physicians [85] and reminders for health care providers on recommended disease care [73, 85, 87].

Educational programs for health care providers consist of workshops on disease diagnosis and treatment [83], accredited courses for specific diseases [83] and distribution of education materials [87]. Educational interventions for patients include education sessions on specific diseases [73] and distribution of education materials [87]. Bunik and colleagues asserted that the advantage of comprehensive education programs and reminders for health care providers was in promoting the process of care. These interventions can be implemented in clinics with a high patient volume [73].

Another interventional study found that the routine pain assessment alone did not manage to improve the quality of pain care [80]. The study suggested that by improving pain assessment, pain care will be improved. However, the challenges in implementing the pain assessment, such as physicians' unfamiliarity with the fifth vital sign and awareness of patients' pain, need to be addressed before improvement in pain care can be seen [80].

2.4.4 Scale Measurements Used

In evaluating quality of care, the standards that are used to rate the quality of medical care and indicators of the provision of medical care need to be identified first. The next step is selecting the scale measurement to be applied to the indicators. Selecting the right scale measurement is important because it influences the statistical analysis and data presentation, as do the accuracy of the indicators being measured (95).

As illustrated in Table 2-4, most of the studies used nominal scales (n= 19) to assess the indicator. A nominal scale is the basic level of measurement and categorises the data into discrete groups. For some indicators, such as medication usage, different assessment scales can be used. A nominal scale, can be used to count the occurrence of a medication being prescribed or not prescribed, or even both (78). The numbers of prescription for medications (77) is an example of using a numerical scale, which is the finest level of measurement (95). Although numbers of prescribed medication does not necessarily indicates patients receive good quality of care. In terms of analysing medication usage, ordinal scales can be used to rank the frequency of use for commonly prescribed medication (81).

For this project's data collection from medical records in the Teaching Clinic, the number of types of Chinese medicine treatment provided to the patients (such as acupuncture, herb) can be recorded on a numerical scale. For the indicators of outcomes from Chinese medicine treatment, practitioners' assessment on patients' progress (i.e., patients' energy, sleep, appetite and excretion (including bowel motion and urination) will apply ordinal scale. Patients' progress will be rated as "1" for no symptom, "2" for improvement in symptom and "3" for presence of the symptom. The ordinal scale will be applied to rate intensity of adverse events from the provided Chinese medicine treatment. Intensity of adverse events will be assessed as "1" for mild adverse events, "2" for moderate adverse events and "3" for severe adverse events.

2.4.5 Limitation of Medical Records Studies

The studies included in this review identified several weaknesses in retrospectively reviewing medical records. One of the difficulties in retrieving data from medical records is missing data. Some data (e.g., advice on diet, weight control), that are important to evaluate quality of care, are incompletely documented in the medical records [(81)]. Missing data in medical records may due to inadequate recording or inadequate care, which can be hard to differentiate. Missing data complicates data interpretation, and can have misleading interpretations and thus affect the result of study. It is possible that the provision of medications or laboratory tests are not documented in medical records [(102)]. For example, one of the measures for quality of care is appropriate treatment. In assessing treatment appropriateness to patients, not all contraindications known by the physicians are recorded in the medical records [(78)]. Based on incomplete data, it is difficult to measured quality of care, especially for uncommon conditions [(69)].

In assessing quality indicators in medical records, the assessment is confined to data reported in the medical records and the readily interpretable data. For example, aspect of patients' improvements and disease management were assessed based on data documented in the medical records. These data are limited and rely on the assessment skills of attending physicians [(90)]. Some data, that are important to assess quality of care, such as performance factors or physician behaviour, may be unavailable in medical records [(80)]. In another study examining pain care in cancer patients, evaluation of care is restricted by readily interpretable data [(69)]. For example, when screening for pain care, it is simpler to determine whether pain assessment is performed than whether pain management is modified following changes in pain score [(69)].

There is other challenge in abstracting data on improvement of patients from medical records. Evaluating improvement of patients from medical records is difficult because of inconsistent documentation of condition severity [90]. Elger and colleagues demonstrated that the occurrence of insomnia is detectable through medical records, but it is difficult to assess patients' progress because the severity of insomnia were recorded inconsistently [90].

Using computer programs to query electronic medical records is not fool proof. Applying automated review algorithms to identify patients is problematic in some settings [69]. Some patients may not be included in the studies as automated review cannot recognise the "diagnose" in free-text. This also applies to patient data that are documented in free-text fields, such as patients' signs, symptoms and activity level. Automated reviews cannot be conducted on these free-text fields. Another difficulty of automated review is in identifying patients with exclusion criteria [77].

2.4.6 Recommendations for Medical Record Studies

This chapter has outlined the limitations of retrieving data from medical records, and these are some recommendations to improve the data collection from medical records. In capturing the missing data, other data collection tools can be combined with medical record review method. As an example, to have a better insight into patients' compliance, a survey questionnaire comprising Medication Adherence Scale can be administered to patient. Self-administered questionnaires assessing the lifestyle of patients with cardiovascular disease enhanced the quality of medical records, saved consultation time and assisted in performing appropriate intervention [(103)]. In another study determining patients who were likely having undiagnosed diabetes, family history and obesity were frequently unrecorded diabetes risk factors [(104)]. By carrying out risk assessment during consultations, at-risk patients were able to be identified and appropriately screened for diabetes [(104)].

For study on adverse events, abstracting all contributing factors solely from medical records is difficult. Furthermore, information retrieved from medical record review alone, was inadequate to explore in-depth the root causes of adverse events [(105)]. To obtain a more complete picture of the contributing factors, the researchers suggested interviewing patients who had adverse events [(106)]. In addition, through thorough interview with involved healthcare professionals, the influence of different root cause on adverse events can be examined [(105)].

The evaluation of performance is difficult due to inconsistent documentation on the severity of patients' condition. The measure of performance can be improved by structuring documentation in medical records. For example the electronic recorded pain score and structured nursing documentation managed to improve the screening for pain, nausea and vomiting [(69)].

For institutions with different design and types of data documentation in electronic medical records, standardising the design of electronic medical records systems can improve the use of electronic medical records as a research tool. By standardising the electronic medical records system, assessment of patients' diseases, prescribing patterns and clinical outcomes can be uniformly performed and documented within the healthcare system and at the national level. The findings from standardised use of electronic medical records across institutions facilitate identifying institutions with the best practice and identifying areas which need improvement or require constant surveillance [107]. As example, McAdam-Marx et al. were able to describe the prevalence and features of patients with resistant hypertension in the United States, as the data were gathered uniformly and centrally [108].

To protect patient privacy, not all data in electronic medical records are accessible to researchers. For Maddocks and colleagues, documents that include patients' name are inaccessible. This prevents clear description of the quality of care of congestive heart failure. Software that is able to extract unidentifiable related data is needed to enhance the quality of retrieved data and facilitate the evaluation on quality of care [109].

2.5 Conclusion

Medical records can be used to conduct studies on quality of care. In general, the methods used for assessing quality of care consist of three components: indicator of care; standard to evaluate indicators of care; and measurement scale. Indicators are data which are abstracted to reflect the quality of care and can be in the form of structural data, process data or outcome data. Measurement scales explain how the indicator is measured in the studies, whether by ordinal, numerical, nominal or combination of them. Standards, normative and empirical, are used to judge the provision of care in terms of adequacy, improvement or even compliance with guidelines.

The next component of this project, i.e. medical records review, focused on respiratory disorders because it is among the leading disorders with high total burden of disease in Australia, being 7% of the total DALYS (behind cancer, cardiovascular disorder, mental disorder and neurological disorder) [(110)]. Furthermore, respiratory disorder is the most common complaint presented in Australian general practice [(4)]. Although patients with respiratory disorder commonly seek Chinese medicine for their problem [(25)], little is known about the quality of care of Chinese medicine. Therefore, the author reviewed the medical records in a Chinese medicine teaching clinic to examine the management of respiratory disorder.

Because this project will first collect data from medical records in the Teaching Clinic, this review is an overview of the methods for data collection. Throughout this review, options of indicator for quality of care and measurement scale are discussed. Based on the data structure of medical records in the Teaching Clinic, suitable indicators and measurement scales are then selected to answer the research questions. Previous researchers have identified some limitations of studies using medical records, such as incomplete data. Depending on the data obtained from reviewing medical records in the Teaching Clinic, data which are inadequate but essential for the research will be collected using a survey questionnaire.

In conclusion, medical records in an outpatient setting should be critically and periodically reviewed. Outpatient settings are not confined to general practitioner clinics, primary care clinics and hospital outpatient clinics; they also include outpatient clinics of conventional medicine and CAM in academic institutions such as Chinese medicine Teaching Clinic. The benefit from reviewing medical records is to assess quality of care and to improve quality of care through implementable interventions.

CHAPTER 3. MEDICAL RECORDS USED IN A TERTIARY CHINESE MEDICINE TEACHING CLINIC

3.1 Background

In Australia, there are currently three tertiary institutions that offer Chinese medicine degree programs: RMIT University, University of Technology Sydney and University of Western Sydney. The programs offered by these public universities are accredited by the newly established Chinese Medicine Board of Australia. In addition, a few private colleges also offer accredited Chinese medicine courses, such as the Academy of Traditional Chinese Medicine, Endeavour College of Natural Health, Southern School of Natural Therapies and Sydney Institute of Traditional Chinese Medicine [(111)]. With exception of the Academy of Traditional Chinese Medicine, all these institutions are equipped with teaching clinics [(112-117)]. These teaching clinics play a role as a platform for senior students to put into practice their theoretical learning, attain practical experience and familiarise themselves with fully operational clinics. Under the supervision of an experienced Chinese medicine practitioner, the students provide Chinese medicine treatment to patients attending the teaching clinic.

As in any other health practice setting, the teaching clinics document the progress of patients using medical records. Medical records can be an effective tool in clinical research, such as evaluating quality of care (Chapter 2). Comprehensive databases can be developed from the administrative and clinical data in medical records [(118)]. For example, medical records have been used to study: diagnostic and prescribing patterns; treatment responses [(107, 118)]; drug efficacy [(63)]; quality, efficiency and pattern of patient care [(102, 109)]; and adverse events associated with certain medications [(119)]. The use of medical records in research has been extended to: identify patients who are likely to have certain disorders such as depression [(118)]; establish environmental triggering factors in exacerbations of asthma [(120)]; and develop a predictive model of COPD among patients with asthma (63). In addition to the findings from medical records, knowing the characteristics of patients who regularly visit teaching clinics may assist in target marketing to a specific type of patients (121).

In Chinese medicine, medical records are the major method used to document the clinical data of daily practice in the real-world setting. As in Western medicine, medical records data are also valuable in Chinese medicine research to evaluate: the association between symptoms, treatments and syndrome differentiation; and disease or treatment pattern (72). This will help the design and implementation of randomised controlled trials of Chinese medicine by taking into consideration the unique characteristics of Chinese medicine treatment principles and syndrome differentiation of the diseases. Furthermore, the Chinese medicine characteristic of personalised treatment provided by different Chinese medicine practitioners in a clinic setting produced data on attribute of treatment related to Chinese medicine practitioners. This data produced by Chinese medicine practitioners is highly valuable for clinical studies (72) and can also be used to better understand and learn from clinical experiences of reputable Chinese medicine practitioners (122). Evaluating Chinese medicine's daily practice of clinical data (recorded in medical records) is a necessary move from the personalised nature of Chinese medicine treatment towards achieving high rank of evidence-based medicine (72).

3.2 Methodology

3.2.1 Introduction

As discussed earlier (Chapter 1.10), the research questions for this study were to: obtain information on the demographic characteristics and common conditions presented by general patients in the Teaching Clinic; compile reports of adverse events from Chinese medicine treatment; examine overall treatment outcomes from Chinese medicine treatment; and assess the knowledge and experience of Chinese medicine treatment, particularly in patients with respiratory disorders. To answer the research questions, a two-stage data collection approach was employed. The first stage was to collect data by physically reviewing and extracting data from medical records at the Chinese Medicine Teaching Clinic, RMIT University, Bundoora campus. The second stage was to send a follow-up survey questionnaire to patients with respiratory conditions. The processes of conducting the medical records review and the results are discussed in this Chapter. Details of the stage II follow-up survey will be presented in Chapter 4.

3.2.2 Study Setting

The RMIT Chinese Medicine Teaching Clinic was established subsequent to the inception of Discipline of Chinese Medicine in RMIT University in 1993. It is located at Building 213, Plenty Road, Bundoora, in a Melbourne metropolitan northern suburb approximately 30 km from the CBD. The clinic offers Chinese medicine treatments consisting of acupuncture, Chinese herbs (raw, granule and patent herbs), Chinese massage (tuina), moxibustion, cupping and dietary advice. The clinic treats a wide range of conditions including: respiratory diseases; acute and chronic pain; and gastrointestinal, gynaecological and dermatological complaints. The clinic is open to the general public and no referral is needed [112].

Other than Chinese medicine, the Building 213 teaching clinic block also accommodates osteopathy and chiropractic [(112)]. The Teaching Clinic is open during business hours on weekdays. Consultations are provided to both new and return patients [(112)]. The consultation sessions for new and return patients are of 90 minutes and 45 minutes duration, respectively. Appointments for consultations are made by the Teaching Clinic's receptionist. For Chinese medicine treatment, 10 to 12 student practitioners are available for appointments each day. Patients receive Chinese medicine treatment from senior student practitioners from the Bachelor of Chinese Medicine and Master of Acupuncture or Chinese Herbal Medicine, under close supervision of registered Chinese medicine practitioners (most of whom are academic clinicians at the Discipline of Chinese Medicine, RMIT). The consultation fees and herbal medicine charges are discounted compared with normal Chinese medicine clinics (Table 3-1). Further discounted consultation fees are available for pensioners, staff and students of RMIT [(112)].

Table 3-1 Charges for Chinese medicine treatment in the Teaching Clinic and normal clinic

Chinese medicine treatment	Teaching Clinic, RMIT [a]		Price range for Chinese medicine treatment
	Pensioners, RMIT staff and student	Public	
Initial consultation	$20 [b]	$30 [b]	$60 - $90 [c]
Subsequent consultation	$15	$25	$70
Acupuncture	-- [b]	-- [b]	$70
Chinese massage	-- [b]	-- [b]	$50 - $90
Chinese herb			
• Patent herb	$12 per bottle	$12 per bottle	$18 per bottle
• Raw herb	$21 per week	$21 per week	$10–$15 per bag
• Granule herb	$21 per week	$21 per week	$0.85per gram

Source : [a] (112)

[b] The consultation charges include acupuncture and limited Chinese massage treatment related to acupuncture, but does not cover for Chinese herb

[c] The consultation charges may or not cover for acupuncture treatment

In the Teaching Clinic, medical records contain both clinical and administrative forms. New patients are required to complete administrative forms when they register for their initial visit. These include: new client information sheets (Appendix C), patient consent forms (Appendix D) and the sources of knowing about the Teaching Clinic (Appendix E). The new client information sheets collect personal information that is later entered onto the electronic appointment booking system. The residential addresses of the patients with respiratory disorders (who were part of this study) were acquired from the new client information sheets. A signed patient consent form allows students and supervisors to use de-identified patients' medical records for case discussion, education, examination and research. The administrative forms also collect information on whether patients are general public, RMIT staff or students, as well as their source of information regarding the Teaching Clinic. When new patients have completed the administrative forms, they proceed to their Chinese medicine consultation. For return patients, they need to register with the receptionist before going for Chinese medicine consultation.

Chinese medicine consultations begin with the student practitioner asking patients about the nature and history of their presenting complaint. The duration of consultations depend on whether patients are new or return patients. For new patients, detailed information on their medical history, family history, personal history and medication usage are obtained during their initial consultation. For return patients, the student practitioner notes the current progress of patients compared with previous visits. Student practitioners then discuss suitable treatment for patients with the on duty registered Chinese medicine practitioners. Following the discussion, Chinese medicine treatments are provided to the patients. Student practitioners manually enter all of these observations, information, treatment details and progress of the patients as free-text in the paper-based consultation notes and progress note (Appendices E and F). Thus, to identify participants with respiratory conditions for survey administration, medical records in the Teaching Clinic were physically reviewed.

3.2.3 Developing a Data Extraction Form

A data extraction form (in Excel format) was drafted by taking into consideration the research questions and information available in the medical records: consultation notes, progress notes and administration forms. The draft form was submitted and approved by the RMIT University's Human Research Ethics Committee (Appendix B).

Identifying adverse events from the consultation notes and progress notes were guided by a quick reference guide produced by the National Cancer Institute, US. The reference guide describes terminology and intensity scale in characterising adverse events experienced by the patients [(123)].

3.2.4 Data Collection and Management

3.2.4.1 Data Collection from Medical Records

Medical records are stored in the Teaching Clinic as handwritten data. All medical records with consultation notes and progress notes dated 1 January 2010 to 31 December 2011 in the Teaching Clinic were reviewed. During the initial visit by patients to Teaching Clinic, all patients had signed a “Privacy Consent Form” allowing their medical record data to be used for research. It was estimated that there were 2,000 medical records in these two years. The data collected included demographics, medical history, date of visit, primary complaint, secondary complaint, type of treatment interventions, use of other treatment, adverse events and other information. The extracted primary complaints were the main reasons for patients’ visits (as reported by the patients). The demographic data collected were patients’ gender, year of birth, birthplace, occupation, marital status, postcode, and suburb of patients’ residential address. Other information that was extracted referred to the patients’ experience of having Chinese medicine treatment and unfavourable treatment. The way student practitioners dealt with adverse events was also extracted from medical records. Type of treatments interventions described whether the patients received acupuncture, Chinese herb, tuina, cupping and moxibustion.

When reviewing medical records, data were extracted and entered into the data extraction form. Patients’ privacy and confidentiality were maintained by not recording any identifying details; instead they were given unique numbers (to be used exclusively for the current research) to avoid abstracting data from the same medical record multiple times.

3.2.4.2 Identifying Respondents for Survey (Stage II Data Collection)

Among the reviewed medical records, additional information was only collected for patients with respiratory condition. These patients were the potential participants for the follow-up survey (see Chapter 4) and included primary and secondary complaints of respiratory disorder, as reported by the patients. Patients were considered to have respiratory conditions if, during the study period, patients visited the Teaching Clinic for primary complaints or secondary complaints which were related to respiratory system, such as common cold, allergic rhinitis, and asthma (refer Chapter 1.3 for definition on respiratory disorders).

The additional information retrieved on patients with respiratory conditions included patients' contact details and treatment regime. The contact details of these patients, including names and postal addresses, were necessary for mailing the survey questionnaire. Upon completion of survey administration, the patients' names were permanently deleted from the data collection sheet. Treatment regime examined the name of herbs being supplied or acupoints (i.e., acupuncture points) being applied on patients.

For collecting data on overall treatment outcome of patients, a coding system was used. The coding system facilitated data abstraction from the practitioners' assessments, and instead of emphasis on symptom improvement, this study focused on examining the practice. The overall treatment outcomes of patients were collected in terms of energy, sleep, appetite, excretion and presence of phlegm. The treatment outcomes were subjective based on treating practitioner's assessment and rated as: "1" for no symptoms after treatment; "2" symptoms improved; and "3" symptoms remained.

3.2.4.3 Management of Extracted Data

All data in the medical records were documented in free text form. To facilitate the data extraction process, coding of information related to demographic characteristics (such as medical history, birthplace, occupation, marital status) and adverse events, was able to be made before the data extraction took place, by referring to previous studies. Information was entered as free text for data pertaining to patients' presenting condition and overall treatment outcome. Creating coding schemes for this data was challenging because there were limited studies on CAM in teaching clinics on the consistent use of terms for data coding; and the data analysis process became even more difficult because there is no universal protocol for recoding Chinese medicine information in medical records. Strategies to overcome these are discussed in Chapter 3.5.1 below.

3.2.5 Data Analysis

Before analysing the data abstracted from the medical records, the free text data "primary complaint", secondary complaint" and "Chinese medicine diagnosis" were recoded using numerical coding. This task was laborious as well as time consuming.

Data were analysed using Statistical Package for Social Sciences (SPSS) version 21.0. Descriptive statistics were presented for characteristics of patients (including demographic, medical history, presenting conditions). The frequency (percentage) was calculated for qualitative variables: while for quantitative variables (such as age and number of visit), the mean *(M)* and standard deviation (*SD)* was presented (95). Qualitative variables were categorized into different characteristics, such as gender, employment status, country of birth (124). To determine the driving distance from the patients' residential address to the Teaching Clinic, postcode of patients' residence and the Teaching Clinic were entered into Google mapping engine.

Chi-square test was used to compare patients with different attributes and to determine if any statistically significant differences exist between groups (125). When the tested variables did not satisfy the assumption of minimum expected cell frequency (which was >25% of cells in table had expected cell frequencies <5), Fisher's exact test was used to calculate the test statistics (126). In addition, the chi-square test was also used to compare the patterns of presenting complaints to the Teaching Clinic in 2010 and 2011; and the occurrence of adverse event with demographic factor such as age, gender, or with Chinese medicine treatment which were perceived as unfavourable by the patients.

The statistically significant differences between patients in different age groups were examined using a one way between groups analysis of variance (ANOVA) test. When the tested variables did not meet the ANOVA assumption of homogeneity of variance, output was calculated using the Welch method (125). Whereas *t*-test was used to compare means for patients of year 2010 and 2011 (125). Multiple response tests was performed on items for which the patients could have more than one response (127), such as having family and medical history, patient-perceived unfavourable treatment, usage of other treatment modalities, acupoints and herbs provided to the patients and adverse event experienced by the patients. Cross-tabulation for multiple responses was produced for:

- presenting complaint by Chinese medicine treatment provided to patients
- Chinese medicine treatment provided by year 2010 and 2011
- adverse events by year 2010 and 2011 with intensity of adverse events.

A *p*-value of <0.05 was considered statistically significant in all analyses performed.

3.3 Results

From 1 January 2010 until 31 December 2011, 1,677 patients visited the Teaching Clinic for 11,529 treatment sessions. The findings of this study are presented in the following order:

i. Demographic profile of all 1,677 patients visiting the Teaching Clinic
ii. Frequency of visit to the Teaching Clinic by demographic factor
iii. Common conditions presented on each visit (n=11,529) to the Teaching Clinic throughout the study period
iv. Pattern of Chinese medicine treatment provided to address the common conditions
v. Other medical conditions that the patients have besides common conditions
vi. Subgroup analyses of patients who presented with respiratory conditions as the primary complaint (n= 842 visits)
vii. Pattern of Chinese medicine treatment for respiratory conditions
viii. Adverse event recorded in the medical records
ix. Overall outcome of Chinese medicine treatment for patients with respiratory conditions

3.3.1 Demographic of Patients Attending the Teaching Clinic

Although all new patients attending the Teaching Clinic were required to fill in a new client information sheet (which contains demographic data) and were asked for some other information during their initial consultation, not all data were recorded in the medical records. Thus, only available information was collected and analysed.

3.3.1.1 General Demographic Information

A total of 1,677 patients visited the Teaching Clinic during the data collection period from 1 January 2010 to 31 December 2011. Nearly two thirds of the patients were female (n=1,101, 65.7%) and just over one fifth (n=338, 20.2%) were between 25 and 34 years old. The mean age of patients was 42.1±18.1 years; the youngest were babies and the oldest was 100 years old. The number and percentage of patients by age group is shown in Table 3-2. Of the adult patients, the numbers were evenly distributed across the age groups.

Patients visiting the Teaching Clinic were largely married (n=667, 49.2%) and Australian-born (n=1,041, 66.2%). Patients were mainly students (n=450, 28.4%). Patients' occupation can be grouped into employed, unemployed and not in the labour force (including students, domestic duties and pensioner or retiree). This showed that over half of the patients were employed (n=895, 50.7%), followed by not in the labour force (n=747, 47.1%) and unemployed (n=35, 2.2%).

The new client information sheet that was required to be completed by the patients on their initial visit, included questions on whether patients have experience with Chinese medicine treatment prior visit the Teaching Clinic. Almost equal number of patients had (n=802, 49.6%) and had not (n=814, 50.4%) been previously exposed to Chinese medicine treatment (Table 3-2).

Table 3-2 Demographic of patients attending the Teaching Clinic

Characteristics (n=1,677)		**n (%)**
Gender	Female	1,101 (65.7)
	Male	576 (34.3)
Total		1,677 (100.0)
Age (years) M = 42.1±18.1, Range =0–100	0–12	35 (2.1)
	13–17	30 (1.8)
	18–24	286 (17.0)
	25–34	338 (20.2)
	35–44	243 (14.5)
	45–54	283 (16.9)
	55–64	262 (15.6)
	>65	199 (11.9)
Subtotal		1,676 (100.0)
Missing		1
Marital status	Married	667 (49.2)
	Single	510 (37.6)
	Separated or divorced	94 (6.9)
	Widowed	41 (3.0)
	De-facto	44 (3.3)
Subtotal		1,356 (100.0)
Missing		321
Country of birth	Australia	1,041 (66.2)
	Overseas	532 (33.8)
Subtotal		1,573 (100.0)
Missing		104
Occupation	Student	450 (28.4)
	Professional	227 (14.3)
	Pensioner or retiree	208 (13.1)
	Manager, clerical, administrative, public service	180 (11.4)
	Labourer and trade workers	152 (9.6)
	Service oriented workers [a]	147 (9.3)
	Other occupations	96 (6.1)
	Domestic duties	89 (5.6)
	Unemployed	35 (2.2)
Subtotal		1,584 (100.0)
Missing		93
Chinese Medicine experience	Patients have had Chinese Medicine before	802 (49.6)
	Patients have not had Chinese Medicine before	814 (50.4)
Subtotal		1,616 (100.0)
Missing		61

Data analysis excludes missing values.

[a] Include workers in retail outlet, community and personal service, volunteer.

For the 532 overseas-born patients, the top 15 countries of birth are presented in Table 3-3. Most patients were born in China (n=51, 9.6%), followed by UK (n=41, 7.7%), Italy (n=37, 7.0%), India (n=31, 5.8%), Greece (n=28, 5.3%) and Malaysia (n=26, 4.9%). From the 15 top countries, Asian-born patients (which include China, India, Malaysia, Korea, Taiwan, Sri Lanka, Philippines, Japan and Singapore) amounted to 190 patients (36%; Table 3-3).

Table 3-3 Top 15 countries of birth for overseas-born patients attending the Teaching Clinic

Country of birth	n (%)
China	51 (9.6)
UK	41 (7.7)
Italy	37 (7.0)
India	31 (5.8)
Greece	28 (5.3)
Malaysia	26 (4.9)
New Zealand	20 (3.8)
Korea	17 (3.2)
Taiwan	17 (3.2)
Sri Lanka	14 (2.6)
Japan	13 (2.4)
Philippine	12 (2.3)
Germany	12 (2.3)
Lebanon	12 (2.3)
Singapore	11 (2.1)
Other countries	190 (36.0)
Total	**532 (100)**

3.3.1.2 Residential Area

Of the 1,658 patients who had their residential address recorded in the medical records, the distribution of residential postcodes is shown in Table 3-4. The postcode with the highest number of patients was 3082 (Mill Park) (n=152) followed by suburbs with the postcode 3083 (Bundoora, La Trobe University, Kingsbury) (n=145); 3073 (Reservoir) (n=67); 3088 (Briar Hill, Greensborough, St Helena) (n=62); and 3752 (South Morang) (n=59). These suburbs were those surrounding the Teaching Clinic (Table 3-4).

Table 3-4 Residential postcodes of patients in the Teaching Clinic

Postcode	No. [a]	Postcode	No. [a]	Postcode	No. [a]	Postcode	No. [a]	Postcode	No. [a]
2604	1	3061	5	3125	1	3193	1	3787	1
3000	2	3064	35	3126	1	3199	3	3793	1
3004	1	3068	6	3127	3	3204	2	3796	1
3008	2	3070	33	3128	7	3207	2	3799	3
3011	4	3071	25	3129	8	3212	2	3805	1
3012	2	3072	43	3130	3	3214	1	3806	2
3013	1	**3073**	**67**	3131	4	3215	1	3810	3
3015	2	3074	31	3133	3	3222	1	3842	1
3016	1	3075	36	3134	6	3223	1	3888	1
3018	2	**3076**	**58**	3135	1	3228	1	3910	1
3020	7	3078	2	3136	3	3250	2	3926	1
3021	11	3079	10	3137	2	3352	1	3934	1
3022	1	3081	16	3138	5	3427	1	3941	1
3023	8	**3082**	**152**	3140	6	3429	5	3950	1
3025	3	**3083**	**145**	3141	1	3430	1	4740	1
3027	1	3084	26	3143	2	3431	4	4810	1
3028	3	3085	36	3144	1	3435	1	5019	1
3029	1	3086	1	3145	1	3438	2	5041	1
3030	4	3087	22	3146	1	3441	3	5290	1
3031	3	**3088**	**62**	3147	2	3447	1	6010	1
3032	7	3089	25	3148	4	3450	1	6168	2
3033	3	3090	4	3149	2	3463	1	6714	2
3034	3	3091	3	3150	4	3523	2	3787	1
3036	1	3093	2	3151	1	3550	1	3793	1
3037	11	3094	21	3152	2	3585	1	3796	1
3038	4	**3095**	**53**	3153	1	3608	2	3799	3
3039	3	3096	8	3155	4	3641	1	3805	1
3040	8	3097	3	3156	1	3650	1	3806	2
3041	2	3099	10	3161	3	3677	1	3810	3
3042	1	3101	16	3162	1	3690	1	3842	1
3043	13	3102	3	3165	1	3717	1	3888	1
3044	10	3103	5	3166	2	3719	1	3910	1
3046	28	3104	2	3167	1	3730	1	3926	1
3047	14	3105	3	3168	2	3751	2	3934	1
3048	13	3106	7	3170	2	**3752**	**59**	3941	1
3049	4	3107	2	3171	1	3753	1	3950	1
3051	6	3108	8	3172	1	3754	37	4740	1
3052	2	3109	8	3174	1	3756	25	4810	1
3053	1	3111	2	3175	1	**3757**	**59**	5019	1
3054	2	3113	9	3178	1	3758	5	5041	1
3055	4	3115	1	3181	4	3759	1	5290	1
3056	14	3116	1	3182	2	3761	1	6010	1
3057	7	3121	1	3183	1	3763	3	6168	2
3058	17	3122	5	3186	1	3764	2	6714	2
3059	2	3123	1	3188	1	3765	1	Missing	19
3060	10	3124	1	3192	1	3767	1	**Total**	**1,677**

[a] Number of patients residing in each postcode area.
Postcode areas with more than 50 patients are bold.

The residential postcodes of patients attending the Teaching Clinic were classified according to states in Australia in descending order (Table 3-5). The Teaching Clinic is situated in Bundoora, Victoria, Australia, and as expected, almost all patients lived in Victoria (n=1,647, 99.3%). Of the 1,647 patients who reside in Victoria, most patients were from metropolitan area (n=1,608, 97.6%). Interestingly, a small proportion of patients visited the Teaching Clinic from rural Victoria (n= 39, 2.4%; Table 3-5).

For patients who reside in Victoria, the areas of residence were summarised into eight regions (in descending order) in accordance with categorisation of the Department of Health, Victorian State Government (Table 3-6). The Teaching Clinic is located in Northern and Western metropolitan region and patients' residence were concentrated in the Northern and Western metropolitan region (n=1,589, 96.5%). While for other regions, the proportion were 1% or lower (Table 3-6).

For patients residing in Victoria, the driving distance from the patients' residence to the Teaching Clinic was determined using an internet-based mapping engine (Table 3-7). Most patients lived six to 10 kilometres (n=493, 30.0%), followed by 16 to 35 kilometres (n=420, 25.5%) from the Teaching Clinic. Of 36 patients who lived more than 76 kilometres from the Teaching Clinic, 30 resided in rural regions (such as Barwon South West, Gippsland, Grampians, Hume and Loddon Mallee), three patients respectively lived in the Eastern metropolitan region and Southern metropolitan region. Overall, approximately two thirds patients lived within 15 kilometres of the Teaching Clinic (n=1,019, 61.9%; Table 3-7). These patients all lived in Northern and Western metropolitan region, with most of them came from suburbs surrounding the Teaching Clinic, such as Mill Park, Bundoora, Reservoir, Greensborough, and Epping.

Table 3-5 Location of residence for patients visiting the Teaching Clinic

Location of residence (n=1,677)		n (%)
By state	Victoria	1,647 (99.3)
	Australian Capital Territory	1 (0.1)
	Queensland	2 (0.1)
	South Australia	3 (0.2)
	West Australia	5 (0.3)
Subtotal		1,658 (100.0)
Missing		19
Locations for Victoria state	Metropolitan area	1,608 (97.6)
	Rural Victorian region	39 (2.4)
Total		1,647 (100.0)

Data analysis excludes missing values.

Table 3-6 Regions of residence for patients residing in Victoria

Victorian Department of Human Services Region (128)		n (%)
Metropolitan area	Northern and Western metropolitan region	1,589 (96.5)
	Southern metropolitan region	16 (1.0)
	Eastern metropolitan region	3 (0.2)
Rural Victorian region	Loddon Mallee	17 (1.0)
	Hume	10 (0.6)
	Barwon South West	9 (0.5)
	Gippsland	2 (0.1)
	Grampians	1 (0.1)
Total		**1,647 (100.0)**

Table 3-7 Distance from patients' residence to the Teaching Clinic (in Victoria only)

Distance from patient's residence to the Teaching Clinic		n (%)
Distance (km)	≤5 km	297 (18.0)
	6–10 km	493 (30.0)
	11–15 km	229 (13.9)
	16–35 km	420 (25.5)
	36–75 km	172 (10.4)
	≥76 km	36 (2.2)
Total		**1,647 (100.0)**

3.3.1.3 Cross-tabulation Analyses of Occupation

Chi-square analysis of patients' occupation and demographic factors found statistically significant associations between patients' occupation with gender ($\chi^2(8)=143.3$, $p<0.01$), age ($\chi^2(24)=1076.9$, $p<0.01$), country of birth ($\chi^2(8)=18.0$, $p=0.02$) and residential state ($\chi^2(8)=19.1$, $p=0.03$; Table 3-8).

There was an overall association between occupation and gender ($\chi^2(8)=143.3$, $p<0.01$). In each of the occupation groups, the proportion of females was highest for domestic duties (n=87, 97.8%), followed by service-oriented workers (n=119, 81.0%), manager, clerical, administrative and public service (n=145, 80.6%) and professionals (n=160, 70.5%). The proportion of males was highest for labourers and trade workers (n=94, 61.8%). With respect to age, most students were between 18 to 34 years old (n=345, 76.7%). While patients in other occupations categories were mostly 35 to 54 years old, except for pensioner or retiree patients who were largely 55 years old and above (n=197, 94.7%) ($\chi^2(24)=1076.9$, $p<0.01$). In terms of country of birth, patients born in Australia were more likely to visit the Teaching Clinic compared with overseas-born patients ($\chi^2(8)=18.0$, $p=0.02$). For each category of occupations, more than 50% of patients were born in Australia. Whereas patients who were not working (domestic duties, unemployed, pensioner or retiree) were largely female ($\chi^2(8)=143.3$, $p<0.01$) and Australian-born ($\chi^2(8)=18.0$, $p=0.02$; Table 3-8).

Earlier Table 3-2 presented that the patients in the Teaching Clinic were mainly students (n=450, 28.4%). Cross-tabulation analyses showed that females made up about three fifths (n=267, 59.3%) of students ($\chi^2(8)=143.3$, $p<0.01$; Table 3-8). Most of the students were Australian-born (n=300, 69.3%) ($\chi^2(8)=18.0$, $p=0.02$), between 18 to 34 years old (n=345, 76.7%) ($\chi^2(24)=1076.9$, $p<0.01$) and Victorian residents (n=445, 99.6%; $\chi^2(8)=19.1$, $p=0.03$; Table 3-8).

Table 3-8 Analyses of patients' occupations by selected demographic factors

Demographic factor (n=1,677)	Occupation, n (%)									Chi-square (df, *p*-value)
	Student (n=450)	Manager and related (n=180) [a]	Professional (n=227)	Labourer, trade worker (n=152)	Service oriented worker (n=147)	Pensioner, retiree (n=208)	Domestic duties (n=89)	Unemployed (n=35)	Others (n=96)	
Gender [b]										
Male (n=544)	183 (40.7)	35 (19.4)	67 (29.5)	94 (61.8)	28 (19.0)	76 (36.5)	2 (2.2)	13 (37.1)	46 (47.9)	143.3 (8, <0.01)
Female (n=1,040)	267 (59.3)	145 (80.6)	160 (70.5)	58 (38.2)	119 (81.0)	132 (63.5)	87 (97.8)	22 (62.9)	50 (52.1)	
Age (years) [b]										
0–17 (n=51)	51 (11.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1076.9 (24, <0.01)
18–34 (n=615)	345 (76.7)	45 (25.0)	81 (35.7)	42 (27.6)	51 (34.7)	1 (0.5)	12 (13.5)	10 (28.6)	28 (29.2)	
35–64 (n=498)	51 (11.3)	91 (50.6)	104 (45.8)	67 (44.1)	68 (46.3)	10 (4.8)	45 (50.5)	18 (51.4)	44 (45.8)	
≥55 (n=420)	3 (0.7)	44 (24.4)	42 (18.5)	43 (28.3)	28 (19.0)	197 (94.7)	32 (36.0)	7 (20.0)	24 (25.0)	
Country of birth [c]										
Australia (n=1,005)	300 (69.3)	124 (71.3)	139 (64.7)	97 (67.8)	103 (72.5)	111 (57.8)	47 (54.7)	23 (67.6)	61 (65.6)	18 (8, 0.02)
Overseas (n=507)	133 (30.7)	50 (28.7)	76 (35.3)	46 (32.2)	39 (27.5)	81 (42.2)	39 (45.3)	11 (32.4)	32 (34.4)	
Residential state [d]										
Victoria (n=1,560)	445 (99.6)	175 (97.8)	219 (97.8)	151 (100.0)	147 (100.0)	206 (100.0)	87 (100.0)	34 (100.0)	96 (100.0)	19.1 (8, 0.03) [e]
Other state (n=11)	2 (0.4)	4 (2.2)	5 (2.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	

[a] Referring to manager, clerical, administrative, and public service.
[b] Missing (n=93), [c] missing (n=165), [d] missing (n=106). Data analysis excludes missing values.
[e] Used Fisher's exact test to calculate the test statistics.
Percentage was calculated based on total number of respondents in respective occupation category.

3.3.1.4 Cross-tabulation Analysis on Number of Visit

During 2010 and 2011, a total of 11,529 visits to the Teaching Clinic were made by the 1,677 patients. The total number of visits increased by 15.1% from 2010 (n=5,359 visits) to 2011 (n=6,170 visits).

For the 1,677 patients who visited the Teaching Clinic, numbers of visits are presented in Table 3-9. The mean number of visits for patients in 2010 (*M*=3.2±5.9) was quite similar to that in 2011 (*M*=3.7±6.3). There were 891 patients who visited the Teaching Clinic in 2010, and 626 (37.3%) did not return for treatment in 2011. The remaining 265 (29.7%) patients visited the clinic in 2010 and had a subsequent visit in 2011 (for new or ongoing conditions). Of the 1,677 patients, 786 (46.9%) started coming to the Teaching Clinic in 2011. The highest number of visits for a single patient was higher in the year 2011 (65 visits) compared with the year 2010 (58 visits).

Table 3-9 Number of visit to the Teaching Clinic

Number of visits	2010	2011	2010-2011
Mean ± *SD*	3.2±5.9	3.7± 6.3	6.9± 9.7
Median	1.0	1.0	4.0
Mode	0	0	1.0
Range (max–min)	58–0	65–0	103–1
Number of patients with no visit in the year, n (%)	786 (46.9)	626 (37.3)	--

Table 3-10 presents *t*-test and ANOVA analysis of the number of visits to the Teaching Clinic by demographic factors. There was no statistically significant difference in the mean number of visits for patients of different genders ($t(1675)=0.7$, $p=0.51$) and countries of birth ($t(1571)=-0.01$, $p=0.99$; Table 3-10).

There was a statistically significant effect of patients' age groups on frequency of visiting the Teaching Clinic (F (7,281.1) =7.8, $p<0.01$). Patients aged more than 65 years old visited the Teaching Clinic most frequently ($M=9.2\pm9.8$) while patients aged from 13 to 17 years old visited the least ($M=4.5\pm4.7$; F (7,281.1) =7.8, $p<0.01$; Table 3-10).

A statistically significant difference was observed for patients' occupations ($F(8,367.9)=4.0$, $p<0.01$) who frequently visiting the Teaching Clinic, with unemployed patients ($M=11.8\pm20.9$) had the highest mean number of visits, followed by other occupations ($M=9.8\pm13.2$), pensioner or retiree ($M=9.0\pm9.4$) and service oriented workers ($M=7.1\pm11.8$). Students had the lowest mean number of visits ($M=5.4\pm8.2$). Patients who were not working had higher mean number of visits than working patients ($F(8,367.9)=4.0$, $p<0.01$; Table 3-10).

The location and region of patients' residence had a statistically significant effect on the mean number of visits. Patients who reside in Victoria ($M=6.9\pm9.7$) had larger mean number of visits than patients who lived in other states ($M=1.9\pm1.3$; $t(18.9)=-10.9$, $p<0.01$). Of patients who lived in Victoria, patients who reside in metropolitan area visited the Teaching Clinic more frequently ($M=7.0\pm9.8$) compared with patients who lived in rural Victoria ($M=3.8\pm3.9$; $t(50.4)=-4.8$, $p<0.01$; Table 3-10).

Table 3-10 Mean number of visits to the Teaching Clinic by demographic factor

Demographic factor (n=1,677)	Mean	*SD*	*p*-value
Gender (n=1,677)			0.51
Female	6.9	9.9	
Male	6.7	9.1	
T-test for significant difference: *t* (1675)=0.7, *p*=0.51			
Age (years) (n=1,676)			<0.01[a]
0–12	6.0	8.0	
13–17	4.5	4.7	
18–24	4.6	7.2	
25–34	6.3	10.7	
35–44	6.1	9.1	
45–54	7.9	10.4	
55–64	8.4	10.3	
≥65	9.2	9.8	
Missing (n=1)			
ANOVA test for significant difference: *F* (7, 281.1)=7.8, *p*<0.01			
State of residence (n=1677)			<0.01
Victoria state	6.9	9.7	
Other states	1.9	1.3	
T-test for significant difference: *t* (18.9)=−10.9, *p*<0.01			
Regions of residence in Victoria state (n=1,647)			<0.01
Metropolitan area	7.0	9.8	
Rural Victoria region	3.8	3.9	
T-test for significant difference: *t* (50.4)=−4.8, *p*<0.01			

[a] ANOVA Welch method was applied to calculate the test statistic
Data analysis excludes missing value.

Table 3-10: Mean numbers of visits to the Teaching Clinic by demographic factor (continued)

Demographic factor (n=1,677)	Mean	*SD*	*p*-value
Country of birth (n=1,573)			0.99
Australia	6.8	9.7	
Overseas	6.8	9.5	
Missing (n=104)			
T-test for significant difference: t (1571)=−0.01, p=0.99			
Occupation (n=1,584)			<0.01[a]
Student	5.4	8.2	
Manager, clerical, administrative, public service	5.9	7.8	
Professional	6.2	8.8	
Labourer and trade workers	6.8	8.0	
Service oriented workers	7.1	11.8	
Pensioner or retiree	9.0	9.4	
Domestic duties	7.2	8.0	
Unemployed	11.8	20.9	
Other occupations	9.8	13.2	
Missing (n=93)			
ANOVA test for significant difference: F (8,367.9)=4.0, p<0.01			

3.3.2 Common Conditions Presented to the Teaching Clinic

Primary health conditions presented at each visit during 2010 and 2011 was categorised according to the main disorder groups (Figure 3-1). The health conditions were grouped and defined by referring to the online version of The Merck Manual for Health Care Professionals [129], except for the groups which did not fit any of the Merck's categorization (e.g. emotional disorder, sleep disorder, weight loss, general well being and smoking cessation). For example, the group musculoskeletal and pain disorder included: pain in and around joints; autoimmune rheumatic disorders; joint disorders; osteoporosis; neck and back pain; hand disorders; and foot and ankle disorders [129]. Emotional disorder, an example of a disorder group not available in Merck manual included patients' complaints of anxious, stress, depress, irritable, unstable mood and grief. There were also a small proportion of patients who did not complain of any health conditions and sought Chinese medicine treatment to maintain and/or improve their general well being.

During 2010 and 2011, Chinese medicine treatment was frequently sought for musculoskeletal and pain disorder (5,407 visits), followed by emotional disorder (1,290 visits) and obstetrics and gynaecology disorder (946 visits). Respiratory disorders, which were the focus of this study, were the fourth most common (Figure 3-1).

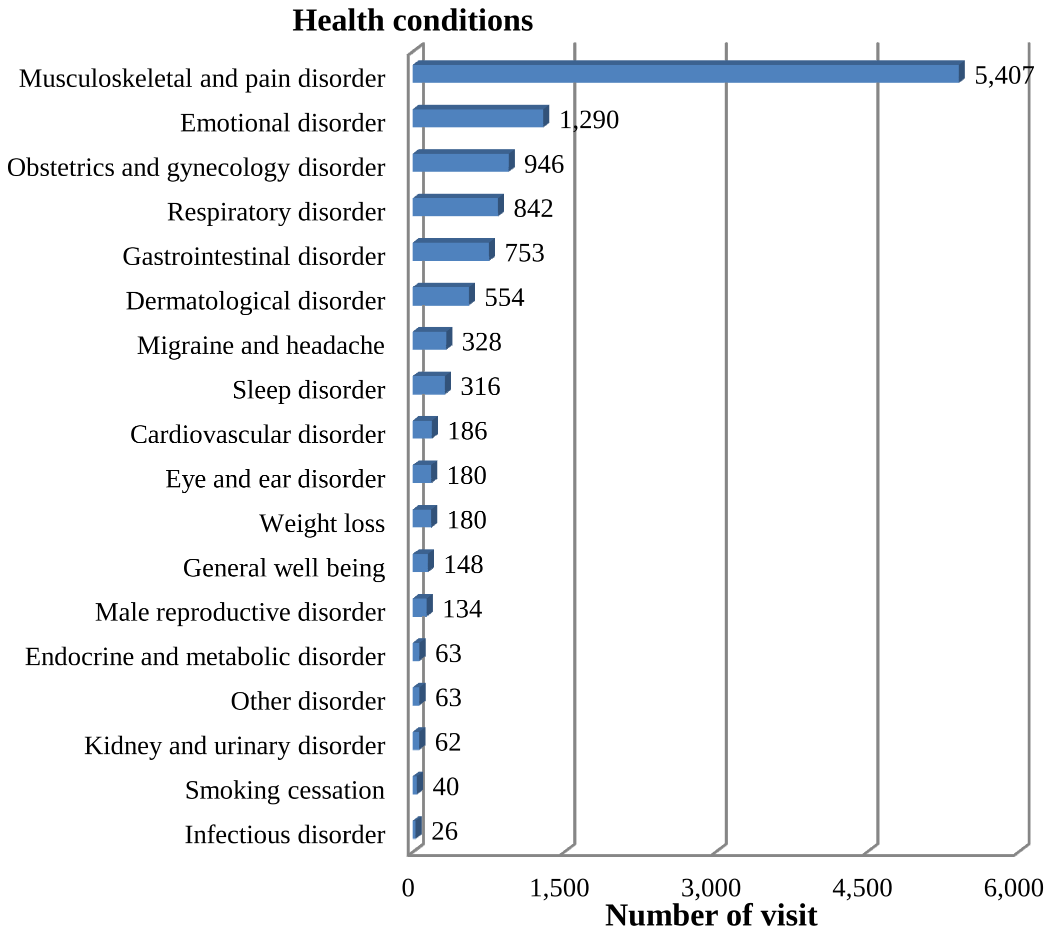

Figure 3-1 Category of presented health conditions

Total visits=11,529. Missing (n=11). Data analysis excludes missing value.

Table 3-11 shows the types of health conditions presented in the Teaching Clinic (in descending order) in 2010 and 2011. There was a statistically significant difference in the type of presenting health conditions between year 2010 (n=5,353 visits) and 2011 (n=6,165 visits; $\chi^2(17)=134.9$, $p<0.01$). Generally, the five most common health conditions during the year 2010 (i.e., musculoskeletal and pain disorders, emotional disorders, obstetrics and gynaecology disorders, respiratory disorders and gastrointestinal disorders) were the same as in the year 2011. Although patients predominately sought Chinese medicine for treating their illness, they also sought Chinese medicine in pursuing healthy lifestyle such as for weight loss (n=180), general wellbeing (n=148) and smoking cessation (n=40).

There was an increase in some health conditions treated from the year 2010 to the year 2011. There was a large increase in the number of visits for dermatological disorders (an increase of 51.8%). Other increases in number of visits from 2010 to 2011 were less than 50% such as for cardiovascular disorders (48.0%), gastrointestinal disorders (46.9%), respiratory disorders (32.0%) and musculoskeletal and pain disorders (18.4%). Some health conditions were presented less often in the 2011 (compared with 2010). These included endocrine and metabolic disorders (reduction by 50.5%), and emotional disorders (reduction by 23.0%; $\chi^2(17)$==134.9, p <0.01; Table 3-11).

Cross-tabulation analysis showed there was significant association between patients' presenting health conditions and age ($\chi^2(51)=452.9$, $p<0.01$; Table 3-12). Musculoskeletal and pain disorders was the main health condition presented by patients older than 18 years: from 18 to 34 years (n=317, 34.5%), 35 to 54 years (n=523, 45.4%) and aged 55 years and above (n=4,553, 48.7%). For patients aged less than 18 years old, the top three reasons for visiting the Teaching Clinic were: migraine and headache (n=21, 21.0%), dermatological disorders (n=19, 19.0%) and respiratory disorders (n=17, 17.0%). The analysis also showed that patients aged from 18 to 34 years old had most visits for emotional disorders (n=157, 17.1%) and obstetrics and gynaecological disorders (n=112, 12.2%) compared with patients in other age groups ($\chi^2(51)=452.9$, $p<0.01$; Table 3-12).

Table 3-11 Health conditions presented at each treatment session (in descending order)

Presented health conditions (n=11,529)	Total, n [a]	Year 2010, n (%)[b]		Year 2011, n (%)[c]	
Musculoskeletal and pain disorders	5,407	2,476	(46.2)	2,931	(47.5)
Emotional disorders	1,290	729	(13.6)	561	(9.1)
Obstetrics and gynaecology disorders	946	469	(8.8)	477	(7.7)
Respiratory disorders	842	363	(6.8)	479	(7.8)
Gastrointestinal disorders	753	305	(5.7)	448	(7.3)
Dermatological disorders	554	220	(4.1)	334	(5.4)
Migraine and headache	328	152	(2.8)	176	(2.9)
Sleep disorders	316	135	(2.5)	181	(2.9)
Cardiovascular disorders	186	75	(1.4)	111	(1.8)
Weight loss	180	97	(1.8)	83	(1.3)
Eye and ear disorders	180	89	(1.7)	91	(1.5)
General wellbeing	148	75	(1.4)	73	(1.2)
Male reproductive disorders	134	46	(0.9)	88	(1.4)
Other disorders	63	25	(0.5)	38	(0.6)
Endocrine and metabolic disorders	63	42	(0.8)	21	(0.4)
Kidney and urinary disorders	62	30	(0.6)	32	(0.5)
Smoking cessation	40	6	(0.1)	34	(0.6)
Infectious disorders	26	19	(0.3)	7	(0.1)
Total visit	**11,518**	**5,353**	**(100.0)**	**6,165**	**(100.0)**
Chi-square test for significant difference: χ^2 (17)=134.9, p<0.01					

Percentage was calculated based on total number of visits in respective year.
[a] Missing (n=11), [b] missing (n=6), [c] missing (n=5). Data analysis excludes missing value.

Table 3-12 Health conditions presented in the Teaching Clinic by age group

Presented health conditions (n=11,529)	Age (years), n (%)[a]			
	0–17 (n=100)	18–34 (n= 920)	35–54 (n=1,153)	≥55 (n=9,342)
Musculoskeletal and pain disorders (n=5,405)	12 (12.0)	317 (34.5)	523 (45.4)	4,553 (48.7)
Emotional disorders (n=1,290)	9 (9.0)	157 (17.1)	120 (10.4)	1,004 (10.7)
Obstetrics and gynaecology disorders (n=946)	1 (1.0)	112 (12.2)	117 (10.1)	716 (7.7)
Respiratory disorders (n=842)	17 (17.0)	65 (7.1)	94 (8.2)	666 (7.1)
Gastrointestinal disorders (n=753)	3 (3.0)	91 (9.9)	51 (4.4)	608 (6.5)
Dermatological disorders (n=554)	19 (19.0)	61 (6.6)	73 (6.3)	401 (4.3)
Migraine and headache (n=328)	21 (21.0)	29 (3.2)	40 (3.5)	238 (2.5)
Sleep disorders (n=316)	10 (10.0)	23 (2.5)	34 (2.9)	249 (2.7)
Cardiovascular disorders (n=186)	0 (0)	13 (1.4)	7 (0.6)	166 (1.8)
Weight loss (n=180)	0 (0)	7 (0.8)	18 (1.6)	155 (1.7)
Eye and ear disorders (n=180)	3 (3.0)	5 (0.5)	34 (2.9)	138 (1.5)
General wellbeing (n=148)	1 (1.0)	16 (1.7)	13 (1.1)	118 (1.3)
Male reproductive disorders (n=134)	0 (0)	2 (0.2)	3 (0.3)	129 (1.4)
Other disorders (n=63)	2 (2.0)	5 (0.5)	6 (0.5)	50 (0.5)
Endocrine and metabolic disorders (n=63)	0 (0)	2 (0.2)	9 (0.8)	52 (0.6)
Kidney and urinary disorders (n=62)	2 (2.0)	5 (0.5)	6 (0.5)	49 (0.5)
Smoking cessation (n=40)	0 (0)	3 (0.3)	3 (0.3)	34 (0.4)
Infectious disorders (n=25)	0 (0)	7 (0.8)	2 (0.2)	16 (0.2)
Chi-square test for significant difference: χ^2 (51)=452.9, p<0.01				

[a] Missing (n=14). Data analysis excludes missing value.
Percentage was calculated based on total number of visits in respective age group.

3.3.3 Chinese Medicine Treatment Provided in the Teaching Clinic

The Teaching Clinic provided a range of Chinese medicine treatments, including acupuncture, herb, cupping, moxibustion and massage. There were several types of acupuncture practised in the Teaching Clinic, such as traditional acupuncture, ear acupressure, laser acupuncture and scalp acupuncture. Cupping was either stationary or mobile cupping. Forms of herbs offered to patients were: granule herbs (powder, capsule or tablet), raw herbs or manufactured herbs (patent herbs). Granule herbs were prepared in the Teaching Clinic according to the herb formula prescribed by the practitioners. Because a single herb formula is made up of a number of herbs, the required amounts (in grams) of each type of herb are first gathered. For the granule herbs, the herbs are first mixed and then processed into capsule or tablet form or remain in the original powder form. Manufactured herbs contain a fixed amount of herb formula and were supplied by Good Manufacturers Practice manufacturers. Unlike the manufactured herbs, the amount or dose of the herbs which form the granule or raw herbs can be changed according to patients' conditions.

3.3.3.1 Pattern of Provided Chinese Medicine Treatment

Table 3-13 shows the types of Chinese medicine treatment provided in the Teaching Clinic for the years 2010 and 2011. Patients usually had a combination of Chinese medicine treatments in a visit, for instance traditional acupuncture, ear acupressure plus Chinese herbs to treat a complaint. Because patients may have had more than one type of treatment in a visit, treatments were analysed by multiple responses.

Broadly, there was an increase in the provision of each type of Chinese medicine treatments in 2011 compared with 2010. There was a marked increase for moxibustion (249.2%) and massage (45.7%). Other type of Chinese medicine treatment had increment less than 20% such as cupping (16.9%) and acupuncture (15.6%).

Acupuncture was the most common treatment offered in 2010 (n=5,171, 96.6%) and 2011 (n=5,977, 96.9%) followed by herbs (2010: n=2,874, 53.7%; 2011: n=3,088, 50.1%). Of 11,529 visits to the Teaching Clinic, traditional acupuncture was the most common treatment offered in 2010 (n=5,106, 95.4%) and 2011 (n=5,926, 96.1%). For the type of Chinese herb, granule herbs were most commonly provided in 2010 (n=1,667, 31.1%) and 2011 (n=1,748, 28.3%), compared with other forms of Chinese herbs. Stationary cupping was provided twice as often as mobile cupping in 2010 and 2011. For the 5 visits in year 2010 and 11 visits in year 2011, either the treatment detail was not documented in the medical records, or the patients were referred to medical practitioners, or the patients were not prescribed with any treatment as advised by the supervised practitioners (Table 3-13). Chapter 3.4.5 further discussed the nature and condition of these 16 visits.

Table 3-13 Frequency of types of Chinese medicine provided in each visit

Type of treatment (n=11,529 visits)		Total, n	Year 2010[a] n (%)	Year 2011[b] n (%)
Acupuncture	Traditional acupuncture	11,032	5,106 (95.4)	5,926 (96.1)
	Ear acupressure	702	415 (7.7)	287 (4.7)
	Laser acupuncture	106	60 (1.1)	46 (0.7)
	Scalp acupuncture	62	48 (0.9)	14 (0.2)
Visits had either type of acupuncture		11,148	5,171 (96.6)	5,977 (96.9)
Herbs	Granule herbs	3,415	1,667 (31.1)	1,748 (28.3)
	Raw herbs	1,317	660 (12.3)	657 (10.7)
	Manufactured herbs	1,276	571 (10.7)	705 (11.4)
	External use herbs	86	44 (0.8)	42 (0.7)
Visits had either type of herbs		5,962	2,874 (53.7)	3,088 (50.1)
Cupping	Stationary cupping	696	330 (6.2)	366 (5.9)
	Mobile cupping	305	131 (2.4)	174 (2.8)
Visits had either type of cupping		989	456 (8.5)	533 (8.6)
Other treatment	Massage	1,086	442 (8.3)	644 (10.4)
	Moxibustion	274	61 (1.1)	213 (3.5)
No prescription as advised by supervised practitioners or treatment detail not available		16	5 (0.1)	11 (0.2)

Treatment provided were analysed by multiple response analysis. Percentage was calculated based on total number of visits in each year.
[a] Missing (n= 4), [b] missing (n=1). Data analysis excludes missing value.

During 2010 and 2011, there were 11,529 visits to the Teaching Clinic. There were five visits where the type of treatment was not documented in the medical records; and 16 visits where either treatment details were not available or no treatment was provided as advised by the supervising Chinese medicine practitioners. The remaining 11,508 visits were categorised as single or combination Chinese medicine treatment. In a single visit, patients may receive a combination of up to five types of Chinese medicine treatments (Table 3-14).

There were increases in the provision of some types of treatment during 2011. There was a 66.7% increase in the provision of raw herbs as single treatment. Noticeably, approximately two-thirds of patients had combination Chinese medicine treatment in both 2010 (n=3,555, 66.5%) and 2011 (n=3,993, 64.8%). The same five single Chinese medicine treatments were provided most often in 2010 and 2011: acupuncture, granule herbs, raw herbs, manufactured herbs and massage. Moxibustion, scalp acupuncture, ear acupressure and mobile cupping were each given as the only treatment in one visit throughout 2010 to 2011 (Table 3-14).

With regard to the provision of combination Chinese medicine treatments, Table 3-15 presents the five most commonly used Chinese medicine treatment combinations in the Teaching Clinic. The most common Chinese medicine treatment combinations provided in the year 2010 was the same in the year 2011, and acupuncture was applied in these combinations. Combination treatment of traditional acupuncture and granule herbs were most commonly provided in both year 2010 (n=1,289, 24.1%) and 2011 (n=1,353, 21.9%). In 2011, increases in the number of Chinese medicine treatment combination was greatest for the combination of traditional acupuncture and massage (67.2%) compare with other combinations of Chinese medicine treatment (Table 3-15).

Table 3-14 Frequency of single and combination of Chinese medicine treatment provided in each visit

Type of treatment		Total n	Year 2010 [a] n	(%)	Year 2011 [b] n	(%)
Single treatment were given	Acupuncture	3,669	1,662	(31.0)	2,007	(32.5)
	Granule herbs	147	69	(1.3)	78	(1.3)
	Raw herbs	64	24	(0.4)	40	(0.6)
	Manufactured herbs	32	19	(0.4)	13	(0.2)
	Massage	15	8	(0.1)	7	(0.1)
	Laser acupuncture	20	8	(0.1)	12	(0.2)
	Stationary cupping	7	3	(0.1)	4	(0.1)
	External use herbs	2	0	(0)	2	(0.0)
	Ear acupressure	1	0	(0)	1	(0.0)
	Moxibustion	1	0	(0)	1	(0.0)
	Scalp acupuncture	1	1	(0.0)	0	(0)
	Mobile cupping	1	1	(0.0)	0	(0)
Subtotal		3,960	1,795	(33.4)	2,165	(35.0)
More than 1 type of treatment were given		7,548	3,555	(66.5)	3,993	(64.8)
No treatment provided or treatment detail not available [c]		16	5	(0.1)	11	(0.2)
Total visits		11,529	5,359	(100.0)	6,170	(100.0)

[a] Missing (n=4), [b] missing (n= 1). Data analysis excludes missing value.
[c] No treatment provided as advised by supervised practitioner or treatment detail was not documented in the medical records.
Percentage was calculated based on total number of visits in respective year.

Table 3-15 Combination of Chinese medicine treatment (5 most common) provided in the Teaching Clinic

Type of combination treatment	Total, n	Year 2010 n	(%)	Year 2011 n	(%)
Traditional acupuncture + granule herbs	2,642	1,289	(24.1)	1,353	(21.9)
Traditional acupuncture + raw herbs	1,008	490	(9.2)	518	(8.4)
Traditional acupuncture + manufactured herbs	900	397	(7.4)	503	(8.2)
Traditional acupuncture + massage	644	241	(4.5)	403	(6.5)
Traditional acupuncture + stationary cupping	362	180	(3.4)	182	(3.0)

Percentage was calculated based on total number of visits in respective year.

3.3.3.2 Preference for Chinese Medicine Treatment

For new patients visiting the Teaching Clinic, they are requested to fill in new client information sheet (Appendix C) that include questions on patients' treatment preference. Patients were asked to indicate the Chinese medicine treatments that they did not to want have in their visit. The options of Chinese medicine treatment for patients to select were acupuncture, granule herbs, raw herbs and cupping. Of the total 1,677 patients who visited the Teaching Clinic during 2010 and 2011, 458 patients selected a treatment preference. The available treatment preference were analysed as multiple responses. Analysis by multiple responses was used because patients may have a combination of Chinese medicine treatments they preferred not to have.

Written correspondence on treatment preference was received from 458 patients in over the two years (267 patients in 2010; 191 patients in 2011). Nearly one in two patients (n=221, 48.3%) did not want to have acupuncture treatment. Other Chinese medicine treatments, granule herbs (n=157, 34.3%), raw herbs (n=146, 31.9%) and cupping (n=142, 31.0%) had similar proportion of being unfavoured (i.e. did not want to have). Of 458 patients, few patients indicated that they do not have any Chinese medicine treatment preferences (n=47, 10.3%).

3.3.3.3 Use of Other Treatment Modalities

Apart from Chinese medicine treatment, patients were free to seek other treatment modalities, either to complement their Chinese medicine treatment or to treat other health conditions. For example, patients can patronise the teaching clinic block for other CAM treatments such as chiropractic and osteopathy treatment, or they can attend a hospital or general practitioner clinic for Western medicine. Information on the usage of other treatment types was sought by the student practitioner during the patients' initial visit to the Teaching Clinic. Of the total of 1,677 patients in 2010 and 2011, the usage of other treatment modalities was documented in 439 (26.2%) patients. Because there was no dedicated section in the medical records notes for student practitioners to document the usage of other treatment modalities, not all student practitioners asked and documented patients' usage of other treatment modalities. Because patients may have had more than one type of other treatment, multiple response analysis was performed.

Of the total of 439 patients who had used other treatment modalities, 252 were patients in 2010 and 187 were patients in 2011. In both years, the most sought treatment was chiropractic (2010: n=96, 38.1%; 2011: n=50, 26.7%), followed by osteopathy (2010: n=50, 19.8%; 2011: n=39, 20.9%), physiotherapy (2010: n=38, 15.1%; 2011: n=46, 24.6%) and massage (2010: n=54, 21.4%, 2011: n=20, 10.7%). The co-location of chiropractic and osteopathy teaching clinic within the same building of Chinese medicine teaching clinic may explain chiropractic and osteopathy as the most common other that the patients had. Notably, about one in six patients had Chinese medicine treatment at other practice or had experience of involved in Chinese medicine clinical trial (2010: n=39, 15.5%; 2011: n=34, 18.2%). Less than 6% of patients had other treatments (hydrotherapy, iridology, Qi Gong, hypnotherapy, rehabilitation, reflexology, podiatrist, Bowen therapy, Western herb, and Buteyko exercise) in 2010 and 2011 (Table 3-16).

Table 3-16 Use of other concurrent treatment modalities (10 most commonly used)

Other treatment modalities	Total, n	Year 2010, n (%)	Year 2011, n (%)
Chiropractic	146	96 (38.1)	50 (26.7)
Osteopathy	89	50 (19.8)	39 (20.9)
Physiotherapy	84	38 (15.1)	46 (24.6)
Massage	74	54 (21.4)	20 (10.7)
Chinese medicine [a]	73	39 (15.5)	34 (18.2)
Naturopathy	35	19 (7.5)	16 (8.6)
Myotherapy	15	8 (3.2)	7 (3.7)
Meditation	10	4 (1.6)	6 (3.2)
Homoeopathy	10	5 (2.0)	5 (2.7)
Kinesiology	8	5 (2.0)	3 (1.6)
Other treatment [b]	23	12 (4.8)	11 (5.9)

Response on usage of other concurrent treatments (n=439 patients) were analysed by multiple response. Percentage was calculated based on total number of patients in respective year.

[a] Chinese medicine treatment at other practice or involved in Chinese medicine clinical trial.

[b] Other treatment include hydrotherapy, iridology, Qi Gong, hypnotherapy, rehabilitation, reflexology, podiatrist, Bowen therapy, Western herb, and Buteyko exercise.

3.3.4 Other Medical Conditions

In addition to patients' presenting health conditions, other information on medical history was sought by the student practitioners during the patients' initial visit. In the medical records, a template for recording patients' initial visit was used (Appendix F). The template includes a separate section for practitioners to document patients' other medical conditions. The information on patients' other medical conditions were acquired either through referral letter or medical examination report presented by the patients, or as self-reported by the patients. The conditions were categorized and defined by according to the online version of The Merck Manual for Health Care Professionals [129].

The number of other medical conditions that the patients had is shown in Table 3-17. About three in five patients (2010: n=542, 61.2%; 2011: n=528, 66.7%) had three or more other medical conditions. Small proportions of patients either did not have any other medical conditions (2010: n=45, 5.1%; 2011: n=12, 1.5%) or the other medical conditions were not documented in the medical records (Table 3-17).

Table 3-18 lists the patients' other medical condition. Patients' responses to the questions were analysed by multiple response because patients may have had more than one medical condition. Of the 1,620 patients who had other medical conditions, the five most common medical conditions were musculoskeletal disorders (2010: n=546, 64.8%; 2011: n=543, 69.9%), gastrointestinal disorders (2010: n=359, 42.6%; 2011: n=358, 46.1%), neurological disorders (2010: n=298, 35.3%; 2011: n=294, 37.8%), cardiovascular disorders (2010: n=276, 32.7%; 2011: n=232, 29.9%) and respiratory disorders (2010: n=284, 33.7%; 2011: n=221, 28.4%; Table 3-18).

Table 3-17 Number of other medical conditions that the patients have

Number of patients with medical conditions	Total, n	Year 2010, n (%)	Year 2011, n (%)
No other medical condition [a]	57	45 (5.1)	12 (1.5)
1 or 2 medical conditions	550	298 (33.7)	252 (31.8)
3 or more medical conditions	1,070	542 (61.2)	528 (66.7)
Total number of patients	**1,677**	**885 (100.0)**	**792 (100.0)**

[a] Patients did not have other medical condition or it was not documented in medical records.

Table 3-18 Other medical conditions that the patients have

Other medical conditions	Total, n	Year 2010, n (%)	Year 2011, n (%)
Musculoskeletal disorders	1,089	546 (64.8)	543 (69.9)
Gastrointestinal disorders	717	359 (42.6)	358 (46.1)
Neurological disorders	592	298 (35.3)	294 (37.8)
Cardiovascular disorders	508	276 (32.7)	232 (29.9)
Respiratory disorders	505	284 (33.7)	221 (28.4)
Eye and ear disorders	408	222 (26.3)	186 (23.9)
Emotional disorders	295	163 (19.3)	132 (17.08)
Obstetrics and gynaecology disorders	261	137 (16.3)	124 (16.0)
Dermatological disorders	217	119 (14.2)	98 (12.6)
Infectious disorders	178	116 (13.8)	62 (8.0)
Endocrine and metabolic disorders	168	75 (8.9)	94 (12.1)
Other conditions [a]	683	351 (41.6)	332 (42.7)

Response on other medical conditions (n=1,620 patients) were analysed by multiple response. Percentage was calculated based on total number of patients in respective year.
[a] Other medical conditions include liver disorder, kidney and urinary disorder, cancer or tumour, autoimmune disorder, bleeding problem, hair problem, insomnia.

3.3.5 Respiratory Disorders Presented at the Teaching Clinic

3.3.5.1 Types of Respiratory Disorders

As discussed above, 1,677 patients attended the Teaching Clinic in 2010 and 2011, and made a total of 11,529 visits. Of the total 11,529 visits, 261 patients visited for respiratory disorders, a total of 842 visits. The breakdown of 842 respiratory disorders visits in 2010 and 2011 is shown in Table 3-19.

The three most common respiratory disorders in 2010 and 2011 were: common cold (2010: n=121, 33.3%; 2011: n=113, 23.6%); cough (2010: n=74, 20.4%; 2011: n=101, 21.1%); and allergic rhinitis (2010: n=65, 17.9%; 2011: n=92, 19.2%; Table 3-19). In 2010, the fourth and fifth most common respiratory disorders visits were sinus problem (n=47, 12.9%) and pulmonary alveolar proteinosis (n=32, 8.8%). Whereas in 2011 it was for asthma (n=56, 11.7%) and sinus problem (n=47, 9.8%). While visits for respiratory disorders such as common cold, sinus problem and bronchitis had similar numbers in 2010 and 2011; increases in the number of visits were seen for asthma, allergic rhinitis and cough. The number of visits had risen by 600% for asthma, 41.5% for allergic rhinitis and 36.5% for cough from 2010 to 2011 (Table 3-19).

Some of the respiratory disorders had been presented by the patients in 2010 but not in 2011; these included pulmonary alveolar proteinosis and lung cancer (Table 3-19). The 32 visits for pulmonary alveolar proteinosis in 2010 were made by one single patient, who had not visited the Teaching Clinic in 2011. The patient who had one visit with lung cancer complaint in 2010 did not return in 2011 (Table 3-19).

Table 3-19 Visits of respiratory disorders as primary complaints

Respiratory disorders	Total, n	Year 2010, n (%)	Year 2011, n (%)
Common cold	234	121 (33.3)	113 (23.6)
Cough	175	74 (20.4)	101 (21.1)
Allergic rhinitis	157	65 (17.9)	92 (19.2)
Sinus problem	94	47 (12.9)	47 (9.8)
Asthma	64	8 (2.2)	56 (11.7)
Pulmonary alveolar proteinosis	32	32 (8.8)	0 (0)
Pulmonary fibrosis	22	0 (0)	22 (4.6)
Rhinorrhoea	13	3 (0.8)	10 (2.1)
Sleep apnoea	12	0 (0)	12 (2.5)
Bronchitis	11	5 (1.4)	6 (1.3)
Rhinitis	11	1 (0.3)	10 (2.1)
Shortness of breath	8	5 (1.4)	3 (0.6)
Chest infection	6	1 (0.3)	5 (1.0)
Pneumonia	2	0 (0)	2 (0.4)
Lung cancer	1	1 (0.3)	0 (0)
Total visit	**842**	**363 (100.0)**	**479 (100.0)**
Chi-square test for significant difference: χ^2 (14)=114.7, p<0.01 [a]			

[a] Used Fishers' exact test to calculate the test statistics.
Percentage was calculated based on total number of visits in respective year.

3.3.5.2 History of Respiratory Disorders

Table 3-20 shows the history (duration) of patients having respiratory disorders as primary complaint. Of 842 visits for respiratory disorders, 177 did not give information on the duration of the complaint. Hence, available data were analysed and presented. About one in three (2010: n=122, 41.4%; 2011: n=122, 33.0%) visits were for respiratory disorders of less than two weeks duration. Notably, having a respiratory conditions for more than 5 years duration ranked second in both 2010 (n=91, 30.8%) and 2011 (n=78, 21.1%). From 2010 to 2011, there was an increase in the number of visits for having a respiratory disorder for between one to 11 months (a 133.3% increase) and one to five year (a 120.0% increase). There was a statistically significant difference in history of having respiratory complaints between 2010 and 2011; having a respiratory complaint for less than two weeks and more than five years were presented less in 2011, whereas having respiratory complaint for two weeks to five years duration presented more in 2011 ($\chi^2(4)=25.0$, $p<0.01$) (Table 3-20).

The visits for respiratory disorders were then cross-tabulated with the duration of having the respiratory disorders (Table 3-21). There was an association between the type respiratory disorders and the duration of the respiratory disorders ($\chi^2(20)=453.7$, $p<0.01$). For acute conditions such as common cold (n=167, 86.1%), cough (n=36, 25.9%), most visits to the Teaching Clinic were made when patients had the condition for less than two weeks. A greater proportion of visits relating to chronic respiratory disorders were presented to the Teaching Clinic when patients had experienced it for more than five years (such as allergic rhinitis, n=67, 56.3%), sinus problems (n=32, 42.1%); followed by one to five years (such as asthma, n=21, 51.2%; $\chi^2(20)=453.7$, $p<0.01$; Table 3-21).

Table 3-20 Duration of respiratory primary complaints

Duration of respiratory complaints (n=842)	Total, n	Year 2010, n (%) [a]	Year 2011, n (%) [b]
<2 weeks	244	122 (41.4)	122 (33.0)
2–4 weeks	50	20 (6.8)	30 (8.1)
1–11 months	90	27 (9.1)	63 (17.0)
1–5 years	112	35 (11.9)	77 (20.8)
>5 years	169	91 (30.8)	78 (21.1)
Chi-square test for significant difference: χ^2 (4)=25.0, p<0.01			

[a] Missing (n=68), [b] missing (n=109). Data analysis excludes missing value
Percentage was calculated based on total number of visits in respective year.

Table 3-21 Analyses of respiratory disorders by history of having respiratory disorders

Duration of complaints (n=842)	Respiratory disorders, n (%)[a]					
	Common cold (n=194)	Cough (n=139)	Allergic rhinitis (n=119)	Others [b] (n=96)	Sinus problem (n=76)	Asthma (n=41)
<2 weeks (n=244)	167 (86.1)	36 (25.9)	16 (13.4)	11 (11.5)	13 (17.1)	1 (2.4)
2–4 weeks (n=50)	14 (7.2)	19 (13.7)	5 (4.2)	8 (8.3)	3 (3.9)	1 (2.4)
1–11 months (n=90)	13 (6.7)	40 (28.8)	6 (5.0)	10 (10.4)	20 (26.3)	1 (2.4)
1–5 years (n=112)	0 (0)	30 (21.6)	25 (21.0)	28 (29.2)	8 (10.5)	21 (51.2)
>5 years (n=169)	0 (0)	14 (10.1)	67 (56.3)	39 (40.6)	32 (42.1)	17 (41.5)
Chi-square test for significant difference: χ^2 (20)=453.7, p<0.01						

[a] Missing (n=177). Data analysis excludes missing value.
[b] Other respiratory disorders includes lung cancer (n=1), shortness of breath (n=4), bronchitis (n=8), rhinitis (n=11), sleep apnoea (n=11), pneumonia (n=2), pulmonary fibrosis (n=9), pulmonary alveolar proteinosis (n=32), chest infection (n=6), rhinorrhoea (n=12).
Percentage was calcul**a**ted based on total number of visits in respiratory disorders category.

3.3.5.3 Cross-tabulation Analyses on Respiratory Disorders

The cross-tabulation analyses of respiratory disorders visits with the patients' demographic characteristics found statistically significant differences by their gender, age, country of birth, region of Victoria residence and occupation (Table 3-22).

There was a statistically significant association between visits for respiratory disorders with gender ($\chi^2(5)=33.8$, $p<0.01$; Table 3-22). Overall, a greater proportion of respiratory disorders visits were made by female than male, except for visits for other respiratory disorders (n=75, 63.6%), which include lung cancer, sleep apnoea, bronchitis, rhinitis, pneumonia, shortness of breath, pulmonary fibrosis, pulmonary alveolar proteinosis, rhinorrhoea and chest infection ($\chi^2(5)=33.8$, $p<0.01$; Table-3-22).

In terms of age group, there was a statistically significant relationship with visits for respiratory disorders ($\chi^2(15)=258.2$, $p<0.01$). For each respiratory disorder, most visits were made by adult patients (18 years old and above). Throughout 2010 to 2011, most visits for respiratory disorders were related to common cold (n=234). The largest proportion of the common cold visits were made by patients aged from 18 to 34 years old (n=128, 54.7%). For older patients (55 years old and above), most visits were for cough (n=59, 33.7%). For paediatric patients (younger than 18 years old), most respiratory disorders visits were for asthma (n=30, 46.9%; $\chi^2(15)=258.2$, $p<0.01$; Table 3-22).

Country of birth and region of Victorian residence both showed a statistically significant association with respiratory disorders visits. Australian-born patients ($\chi^2(5)=59.5$, $p<0.01$) and those residing in metropolitan area of Victoria ($\chi^2(5)=37.3$, $p<0.01$) were more likely to visit for respiratory disorders than patients who were overseas-born and reside in rural areas of Victoria. Nearly all respiratory disorders visits were made by patients living in metropolitan areas of Victoria ($\chi^2(5)=37.3$, $p<0.01$; Table 3-22).

There was a statistically significant association between respiratory disorders visits and occupation ($\chi^2(35)=248.8$, $p<0.01$; Table 3-22). On the whole, students had the most respiratory disorders visits for common cold (n=114, 51.4%), allergic rhinitis (n=47, 30.5%) and sinus problem (n=22, 24.2%). For pensioner and retirees, the main respiratory visits were for cough (n=40, 29.2%) and asthma (n=18, 40.9%) ($\chi^2(35)=248.8$, $p<0.01$; Table 3-22).

Table 3-22 Analyses of respiratory disorders visits by demographic information

Demographic factor (n=842)	Respiratory disorders, n (%)						Chi-square (df, *p*-value)
	Common cold (n=234)	Cough (n=175)	Allergic rhinitis (n=157)	Others [a] (n=118)	Sinus problem (n=94)	Asthma (n=64)	
Gender							33.8 (5,<0.01)
Female (n=497)	157 (67.1)	111 (63.4)	96 (61.1)	43 (36.4)	56 (59.6)	34 (53.1)	
Male (n=345)	77 (32.9)	64 (36.6)	61 (38.9)	75 (63.6)	38 (40.4)	30 (46.9)	
Age (years)							258.2 (15, <0.01)
0–17 (n=99)	12 (5.1)	21 (12.0)	28 (17.8)	7 (5.9)	1 (1.1)	30 (46.9)	
18–34 (n=276)	128 (54.7)	39 (22.3)	65 (41.4)	9 (7.6)	26 (27.6)	9 (14.1)	
35–54 (n=257)	61 (26.1)	56 (32.0)	26 (16.6)	63 (53.4)	50 (53.2)	1 (1.5)	
≥55 (n=210)	33 (14.1)	59 (33.7)	38 (24.2)	39 (33.1)	17 (18.1)	24 (37.5)	
Country of birth [b]							59.5 (5, <0.01)
Australia (n=579)	167 (75.9)	111 (70.7)	90 (57.7)	92 (86.8)	56 (61.5)	63 (100.0)	
Overseas (n=214)	53 (24.1)	46 (29.3)	66 (42.3)	14 (13.2)	35 (38.5)	0(0)	

[a] Other respiratory disorders includes lung cancer (n=1), shortness of breath (n=8), bronchitis (n=11), rhinitis (n=11), sleep apnoea (n=12), pneumonia (n=2), pulmonary fibrosis (n=22), pulmonary alveolar proteinosis (n=32), chest infection (n=6), rhinorrhoea (n=13).

[b] Missing (n=49), [c] missing (n=8), [d] missing (n=79). Data analysis excludes missing value.

[e] Used Fisher's exact test to calculate the test statistics.

Table 3-22 Analyses of respiratory disorders visits by demographic information (continued)

Demographic factor (n=842)	Respiratory disorders, n (%)						Chi-square (df, *p*-value)
	Common cold (n=234)	Cough (n=175)	Allergic rhinitis (n=157)	Others [a] (n=118)	Sinus problem (n=94)	Asthma (n=64)	
Region of Victoria [c]							
Rural (n=19)	17 (7.3)	1 (0.6)	0(0)	0(0)	1 (1.1)	0(0)	37.3 (5, <0.01) [e]
Metro (n=815)	215 (92.7)	170 (99.4)	156 (100.0)	118 (100.0)	93 (98.9)	63 (100.0)	
Occupation [d]							
Student (n=247)	114 (51.3)	38 (27.7)	47 (30.5)	14 (12.2)	22 (24.1)	12 (27.3)	248.8 (35, <0.01)
Professional (n=142)	32 (14.4)	16 (11.7)	41 (26.6)	30 (26.1)	23 (25.3)	0(0)	
Pensioner, retiree (n=122)	15 (6.8)	40 (29.2)	18 (11.7)	16 (13.9)	15 (16.5)	18 (40.9)	
Service oriented worker (n=84)	18 (8.1)	5 (3.7)	20 (13.0)	20 (17.4)	8 (8.8)	13 (29.5)	
Others (n=64)	7 (3.2)	14 (10.2)	6 (3.9)	32 (27.8)	5 (5.5)	0(0)	
Labourer, trade worker (n=40)	8 (3.6)	9 (6.6)	12 (7.8)	3 (2.6)	8 (8.8)	0(0)	
Manager and related (n=36)	16 (7.2)	4 (2.9)	9 (5.8)	0(0)	7 (7.7)	0(0)	
Domestic duties, unemployed (n=28)	12 (5.4)	11 (8.0)	1 (0.7)	0(0)	3 (3.3)	1 (2.3)	

[a] Other respiratory disorders includes lung cancer (n=1), shortness of breath (n=8), bronchitis (n=11), rhinitis (n=11), sleep apnoea (n=12), pneumonia (n=2), pulmonary fibrosis (n=22), pulmonary alveolar proteinosis (n=32), chest infection (n=6), rhinorrhoea (n=13).
[b] Missing (n=49), [c] missing (n= 8), [d] missing (n=79). Data analysis excludes missing value.
[e] Used Fisher's exact test to calculate the test statistics.

3.3.6 Chinese Medicine Treatment for Respiratory Disorders

3.3.6.1 General Types of Chinese Medicine Treatment

Of 11,529 visits to the Teaching Clinic in 2010 and 2011, 842 were for respiratory disorders. Of these 842 respiratory disorders visits, there was one where the patient was wearing a Holter monitor[2] and no Chinese medicine treatment was provided in that particular visit. Types of Chinese medicine treatment provided in the remaining 841 visits were then analysed. Apart from providing Chinese medicine treatment (acupuncture, herbs, cupping, moxibustion and massage) in the Teaching Clinic, student practitioners also provide advice on lifestyle and healthy behaviour (such as diet, physical activity). The types of advice noted in the medical records included: diet and water intake; alcohol consumption; smoking habits; rest and relaxation; and physical activity.

The visits for respiratory disorders were classified as having single type or combination of Chinese medicine treatment (Table 3-23). Respiratory disorder were likely managed by combination of Chinese medicine treatment than single Chinese medicine treatment ($\chi^2(55)=84.1$, $p<0.01$). In terms of single treatment, traditional acupuncture was given the most in 2010 (n=63, 17.4%) and 2011 (n=106, 22.2%) compared with single treatments using granule herbs, raw herbs, laser acupuncture and manufactured herbs. Use of a single treatment had increased by 83.6% from 2010 to 2011. Compare to single treatment, a combination of two and three or more types of treatment increased at by a smaller amount (24.8% and 10.2%, respectively) from 2010 to 2011 (Table 3-23).

[2] A compact and light device that the patients wear (commonly for 24 hours) to log their heart rhythm during their normal daily activity. Patients may also require documenting their activities and symptoms. This assessment detect sporadic abnormal heart rhythm, which resting electrocardiogram (EKG) could not identify 130. Webster's new world™ medical dictionary [Internet]. Hoboken, NJ: Wiley Publishing; 2003. Holter monitor. [cited 2014 Feb 16]; Available from: Credo Reference.

Types of Chinese medicine treatment provided to address primary complaints of respiratory disorders are presented in Table 3-24. As discussed earlier, of 842 visits for respiratory disorders, Chinese medicine treatment was not provided in one visit. Because Chinese medicine treatment is commonly provided in combination (such as traditional acupuncture, laser acupuncture concurrent with Chinese herbs), the treatments were analysed by multiple responses (Table 3-24).

Of the 842 visits for respiratory disorders, almost all visits were managed by acupuncture (2010: n=358, 98.6%; 2011: n=463, 96.9%). Chinese herbs (granule, manufactured or raw herbs) were prescribed in nearly four fifths of visits in 2010 (n=284, 78.2%) and 2011 (n=341, 71.3%), and were secondary to the acupuncture treatment. In terms of type of Chinese herbs, granule herbs were provided the most (2010: n=161, 44.4%; 2011: n=182, 38.1%) compared with other forms of Chinese herb. Interestingly, external use herb (2010: n=2, 0.6%; 2011: n=4, 0.8%) was provided for respiratory disorders less than other Chinese medicine treatments (Table 3-29). In the Teaching Clinic, although Chinese medicine treatment was provided mainly to address the patients' primary complaints, treatment for secondary complaints was sometimes incorporated. Of six visits which had been provided with external use herbs, four of them had dermatological disorder (acne, n=2 visits; eczema, n=2 visits) as their secondary complaint. In these four visits, external use herbs were for their dermatological complaint (Table 3-24).

Table 3-23 Frequency of single and combination of Chinese medicine treatment provided for respiratory disorders

Types of treatment (n=842)		Year 2010, n (%)	Year 2011, n (%)
Single treatment given	Traditional acupuncture (n=169)	63 (17.4)	106 (22.2)
	Granule herbs (n=11)	1 (0.3)	10 (2.1)
	Raw herbs (n=2)	1 (0.3)	1 (0.2)
	Laser acupuncture (n=5)	1 (0.3)	4 (0.8)
	Manufactured herbs (n=3)	1 (0.3)	2 (0.4)
Subtotal		67 (18.5)	123 (25.7)
2 type of treatment given (n=528)		237 (65.3)	291 (60.9)
≥3 type of treatment given (n=123)		59 (16.2)	64 (13.4)
No treatment [a]		0 (0)	1 (0)
Total visits		**363 (100.0)**	**479 (100.0)**
Chi-square test for significant difference: χ^2 (55)=84.1, p<0.01			

[a] No treatment provided because patient was wearing Holter monitor.

Table 3-24 Type of Chinese medicine treatment provided for respiratory disorders

Types of treatment (n=842)		Year 2010, n(%)	Year 2011, n(%) [a]
Acupuncture	Traditional acupuncture (n=779)	341 (93.9)	438 (91.6)
	Ear acupressure (n=51)	27 (7.4)	24 (5.0)
	Laser acupuncture (n=38)	15 (4.1)	23 (4.8)
Visits had either type of acupuncture (n=821)		358 (98.6)	463 (96.9)
Chinese herb	Granule herbs (n=343)	161 (44.4)	182 (38.1)
	Raw herbs (n=119)	52 (14.3)	67 (14.0)
	Manufactured herbs (n=178)	77 (21.2)	101 (21.2)
	External use herbs (n=6)	2 (0.6)	4 (0.8)
Visits had either type of herbs (n=625)		284 (78.2)	341 (71.3)
Cupping	Stationary cupping (n=36)	16 (4.4)	20 (4.2)
	Mobile cupping (n=30)	14 (3.9)	16 (3.3)
Visits had either type of cupping (n=63)		29 (8.0)	34 (7.1)
Other treatment	Massage (n=37)	14 (3.9)	23 (4.8)
	Moxibustion (n=9)	2 (0.6)	7 (1.5)

Chinese medicine treatment for respiratory disorders were analysed by multiple response. Percentage was calculated based on total number of visits in respective year.

[a] Data analysis excludes one visit which no treatment was provided.

3.3.6.2 Acupuncture and Chinese Herb

Chapter 3.3.7.1 demonstrated that traditional acupuncture and herb treatment were the most frequent Chinese medicine treatments for respiratory disorders. This section presents details of the types of traditional acupuncture and herb treatment. The acupoints were commonly documented in the medical records using the international acupuncture alphanumeric code and occasionally the pinyin name (e.g., yintang is EX-HN3). These are in concordance with recommendations from the World Health Organization [131]. For example, for acupoint LU1, the alphabetic code LU reflects the lung meridian and the number “1” indicates the location of the specific point in the lung meridian.

In the Teaching Clinic, combinations of acupoints were used with at least two acupoints, and up to 15 acupoints. The acupoints were analysed by multiple response and Table 3-25 presents the five most frequently used acupoints for the 10 common respiratory disorders in 2010 and 2011. Some acupoints was commonly used across the different respiratory disorders. Acupoint LI20 was the most commonly applied in managing allergic rhinitis (n=91, 57.9%), sinus problem (n=77, 81.9%) and rhinitis (n=8, 72.7%). Acupoint LU7 was often used in managing shortness of breath (n=5, 62.5%), bronchitis (n=6, 54.5%), common cold (n=119, 50.9%), asthma (n=25, 39.0%), cough (n=57, 32.6%) and allergic rhinitis (n=47, 29.9%). ST36 was another acupoint frequently used for bronchitis (n=8, 72.7%), shortness of breath (n=4, 50.0%), asthma (n=35, 54.7%), allergic rhinitis (n=84, 53.5%), rhinitis (n=6, 54.5%) and sinus problems (n=37, 39.4%; Table 3-25).

Other acupoints were used for specific respiratory disorders: GB20 for common cold (n=88, 37.6%); KI6 for cough (n=50, 28.6%); EX-B1 (n=36, 56.3%) and SP6 (n=23, 35.9%) for asthma; BL23 (n=4, 30.8%) and BL25 (n=4, 30.8%) for rhinorrhoea; HT7 (n=10, 83.3%), PC6 (n=10, 83.3%), and CV17 (n=9, 75.0%) for sleep apnoea (Table 3-25).

Table 3-26 shows the five most commonly prescribed manufactured herbs for respiratory disorders in the Teaching Clinic. Because manufactured herbs were prescribed either alone or in combination with other manufactured herbs, multiple responses analyses were used. The most frequently prescribed manufactured herbs different by type of respiratory disorders, except for both allergic rhinitis (n=35, 71.4%) and rhinitis (n=7, 100.0%) visits for which Bi Min Gan Wan was the most frequently provided. Student practitioners most often prescribed Yin Qiao San (n=30, 41.7%) and Sang Ju Wan (n=12, 6.7%) for common cold. Qing Qi Hua Tan Wan was prescribed widely for respiratory disorders such as common cold (n=4, 5.6%), cough (n=3, 13.0%), sinus problem (n=1, 5.0%) and bronchitis (n=1, 50.0%). Manufactured herbs such as Jia Wei Xiao Yao Wan, Liu Wei Di Huang Wan, Ba Zhen Wan, Ding Chuan Wan were used only for allergic rhinitis, cough, sinus problem and asthma, respectively (Table 3-26).

Table 3-25 Common acupoints used for respiratory disorders

Respiratory disorders (number of visit) [a]	5 most commonly used acupoints				
Common cold (n=234)	LI4 (n=137, 58.5%)	SJ5 (n=121, 51.7%)	LU7 (n=119, 50.9%)	GB20 (n=88, 37.6%)	LU5 (n=84, 35.9%)
Cough (n=175)	LU5 (n=81, 46.3%)	ST40 (n=75, 42.9%)	KI3 (n=58, 33.1%)	LU7 (n=57, 32.6%)	KI6 (n=50, 28.6%)
Allergic rhinitis (n=157)	LI20 (n=91, 57.9%)	LI4 (n=91, 57.9%)	ST36 (n=84, 53.5%)	EX-HN3 (n=55, 35.0%)	LU7 (n=47, 29.9%)
Sinus problem (n=94)	LI20 (n=77, 81.9%)	LI4 (n=56, 59.6%)	EX-HN3 (n=55, 58.5%)	ST40 (n=40, 42.5%)	ST36 (n=37, 39.4%)
Asthma (n=64)	EX-B1 (n=36, 56.3%)	BL13 (n=35, 54.7%)	ST36 (n=35, 54,7%)	LU7 (n=25, 39.0%)	SP6 (n=23, 35.9%)
Rhinorrhoea (n=13)	GV23 (n=5, 38.5%)	LU9 (n=5, 38.5%)	BL23 (n=4, 30.8%)	BL25 (n=4, 30.8%)	KI3 (n=4, 30.8%)
Sleep apnoea (n=12)	HT7 (n=10, 83.3%)	PC6 (n=10, 83.3%)	CV17 (n=9, 75.0%)	EX-HN3 (n=7, 58.3%)	KI3 (n=6, 50.0%)
Bronchitis (n=11)	ST36 (n=8, 72.7%)	LU7 (n=6, 54.5%)	SJ5 (n=5, 45.5%)	BL13 (n=4, 36.4%)	LU5 (n=4, 36.4%)
Rhinitis (n=11)	LI20 (n=8, 72.7%)	LU9 (n=7, 63.6%)	LI4 (n=6, 54.5%)	ST36 (n=6, 54.5%)	GV23 (n=4, 36.4%)
Shortness of breath (n=8)	LU7 (n=5, 62.5%)	ST36 (n=4, 50.0%)	ST40 (n=4, 50.0 %)	CV17 (n=3, 37.5%)	KI7 (n=3, 37.5%)

Acupoints were analysed by multiple response. Percentage calculated based on total number of visits in each type of respiratory disorders.
[a] Number of visits managed with traditional acupuncture.

Table 3-26 Manufactured herbs commonly prescribed for respiratory disorders

Respiratory disorders (number of visit) [a]	5 most commonly prescribed manufactured herbs				
Common cold (n=72)	Yin Qiao San (n=30, 41.7%)	Sang Ju Wan (n=12, 6.7%)	Gan Mao Ling (n=10, 13.9%)	Qing Qi Hua Tan Wan (n=4, 5.6%)	Zhi Sou Wan (n=4, 5.6%)
Allergic rhinitis (n=49)	Bi Min Gan Wan (n=35, 71.4%)	Qian Bai Bi Yan Pian (n=4, 8.2%)	Jia Wei Xiao Yao Wan (n=3, 6.1%)	Yu Ping Feng San (n=3, 6.1%)	Bu Zhong Yi Qi Wan (n=2, 4.1%)
Cough (n=23)	Zhi Sou Wan (n=7, 30.4%)	Pei Pa Lo Cough Syrup (n=3, 13.0%)	Qing Qi Hua Tan Wan (n=3, 13.0%)	Liu Wei Di Huang Wan (n=2, 8.7%)	Qian Bai Bi Yan Pian (n=2, 8.7%)
Sinus problem (n=20)	Qian Bai Bi Yan Pian (n=12, 60.0%)	Bi Min Gan Wan (n=6, 30.0%)	Tian Wang Bu Xin Dan (n=2, 10.0%)	Qing Qi Hua Tan Wan (n=1, 5.0%)	Ba Zhen Wan (n=1, 5.0%)
Rhinitis (n=7)	Bi Min Gan Wan (n=7, 100.0%)	---	---	---	---
Asthma (n=4)	Ding Chuan Wan (n=2, 50.0%)	Tian Wang Bu Xin Dan (n=1, 25.0%)	Yin Qiao San (n=1, 25.0%)	---	---
Bronchitis (n=2)	Pei Pa Lo Cough Syrup (n=1, 50.0%)	Qing Qi Hua Tan Wan (n=1, 50.0%)	---	---	---
Shortness of breath (n=1)	Yu Ping Feng San (n=1, 100.0%)	---	---	---	---

Manufactured herbs were analysed by multiple response. Percentage calculated based on total number of visits in each type of respiratory disorder.
Manufactured herbs were not provided in visits for rhinorrhoea and sleep apnoea.
[a] Number of visits managed with manufacture herb.

For respiratory visits managed with granule herbs or raw herbs, the herb formula was prescribed and constituents (i.e., single herbs) of the formula were documented in the medical records. Unlike manufactured herbs, these herb formulas were modified according to the patients' condition or to better manage the patients' signs and symptoms. Analysis of the prescribed herb formulas found that 152 types of single herb were commonly prescribed for respiratory disorders. A herb formula is combination of single herbs, and the herb can be in the form of raw or powder herb.

Table 3-27 shows the five most frequently prescribed herbs in formula for respiratory disorders. For cough and common cold, Jie Geng and Gan Cao were the two most frequently prescribed herbs in the formula. In treating allergic rhinitis, asthma and sinus problem, Bai Zhu (n=47, 66.2%), Huang Qi (n=39, 72.2%) and Xin Yi Hua (n=42, 82.4%), respectively, were used the most. There were some herbs prescribed for certain respiratory disorders: Mai Men Dong (n=52, 45.2%) and Chen Pi (n=49, 42.6%) for coughs; Lian Qiao (n=48, 44.4%) for the common cold; and Huang Qin (n=25, 46.3%) for asthma (Table 3-27).

Table 3-27 Single herbs commonly prescribed in herb formula (raw herb or granule herb) for respiratory disorders

Respiratory disorders (number of visit) [a]	**5 most commonly prescribed single herbs**				
Cough (n=115)	Jie Geng (n=75, 65.2%)	Gan Cao (n=74, 64.3%)	Xing Ren (n=58, 50.4%)	Mai Men Dong (n=52, 45.2%)	Chen Pi (n=49, 42.6%)
Common cold (n=108)	Jie Geng (n=68, 63.0%)	Gan Cao (n=60, 55.6%)	Bo He (n=52, 48.1%)	Lian Qiao (n=48, 44.4%)	Xing Ren (n=39, 36.1%)
Allergic rhinitis (n=71)	Bai Zhu (n=47, 66.2%)	Huang Qi (n=46, 64.8%)	Xin Yi Hua (n=44, 62.0%)	Cang Er Zi (n=42, 59.2%)	Fang Feng (n=42, 59.2%)
Asthma (n=54)	Huang Qi (n=39, 72.2%)	Fang Feng (n=31, 57.4%)	Bai Zhu (n=30, 55.6%)	Xing Ren (n=26, 48.1%)	Huang Qin (n=25, 46.3%)
Sinus problem (n=51)	Xin Yi Hua (n=42, 82.4%)	Cang Er Zi (n=42, 82.4%)	Bai Zhi (n=34, 66.7%)	Bo He (n=28, 54.9%)	Bai Zhu (n=27, 52.9%)

Single herbs were analysed by multiple response. Percentage calculated based on total number of visits in each type of respiratory disorder.
[a] Number of visit managed with herb formula (raw or granule herb).

3.3.7 Adverse Events Documented in the Medical Records

Of 11,529 visits throughout 2010 and 2011, the total adverse events were 153 reported in 135 visits. Data on adverse events were analysed by multiple response because patients may have one or more adverse events in a visit Patients may have received single or combination Chinese medicine treatment in a visit, therefore adverse events could not be attributed to a specific type of Chinese medicine treatment.

3.3.7.1 Nature of Adverse Events

Data on adverse events that may result from Chinese medicine treatment provided in the Teaching Clinic are displayed in Table 3-28. There was reduction of adverse events by more than half (58.3%) in 2011 (n=45) compared with 2010 (n=108). In 2010, the five most commonly reported adverse events were: diarrhoea or loose stool (n=15, 13.9%); aggravation of patients' symptoms (n=14, 13.0%); nausea or vomiting (n=10, 9.3%); headache (n=9, 8.3%); and feeling hot after treatment (n=8, 7.4%). In 2011, aggravation of patients' symptoms (n=7, 15.6%) and nausea and vomiting (n=7, 15.6%) were most commonly reported, followed by an increase pain after the treatment session (n=5, 11.1%). Other adverse events were less common, such as experiencing nose bleeding, red eye, cramping and irritable (Table 3-28).

Table 3-28 Nature of identified adverse events

Nature of adverse events (n=153)	Year 2010, n (%)	Year 2011, n (%)
Gastrointestinal effect		
Diarrhoea or loose stool (n=18)	15 (13.9)	3 (6.7)
Nausea or vomiting (n=17)	10 (9.3)	7 (15.6)
Bloating (n=6)	5 (4.6)	1 (2.2)
Heartburn (n=4)	3 (2.8)	1 (2.2)
Stomach pain (n=3)	3 (2.8)	0 (0)
Constipation (n=4)	2 (1.8)	2 (4.4)
Other gastrointestinal effect [a] (n=2)	2 (1.8)	0 (0)
Localised effect		
Needling pain after treatment (n=10)	8 (7.4)	2 (4.4)
Bruise (n=4)	2 (1.8)	2 (4.4)
Increase pain after treatment (n=12)	7 (6.5)	5 (11.1)
Feel tingling after treatment (n=2)	2 (1.9)	0 (0)
Swelling (n=2)	1 (0.9)	1 (2.2)
General effect		
Symptom aggravation [b] (n=21)	14 (13.0)	7 (15.6)
Headache (n=11)	9 (8.3)	2 (4.4)
Skin reaction (n=9)	6 (5.6)	3 (6.7)
Feeling hot (n=9)	8 (7.4)	1 (2.2)
Dizzy or fainting (n=6)	3 (2.8)	3 (6.7)
Drowsy or fatigue (n=4)	1 (0.9)	3 (6.7)
Cardiovascular effect [c] (n=4)	4 (3.7)	0 (0)
Other adverse events [d] (n=5)	3 (2.8)	2 (4.4)
Total number of events	**108 (100.0)**	**45 (100.0)**

Nature of adverse events were analysed by multiple response. Percentage was calculated based on total events in respective years.

[a] Include indigestion and reddish bowel motion

[b] Provided Chinese medicine treatment was related to aggravating patients' presenting complaint.

[c] Cardiovascular effect refers to increase or decrease of blood pressure or experiencing palpitation.

[d] Include nose bleed, red eye, cramping and irritable.

3.3.7.2 Intensity of Adverse Events

Adverse events identified from the medical records in 2010 and 2011were categorised by intensity (Table 3-29). This study adopted an intensity scale used by the US National Cancer Institute [(123)]. Mild adverse events were those which were easily tolerated by the patients or causing minimal discomfort. Moderate adverse events were those which were uncomfortable enough to interfere with daily activities. Severe adverse events were those which required therapeutic intervention [(123)].

Overall, there was reduction in the number of reported mild, moderate and severe adverse events. The largest decrease was for severe adverse events, whereby no severe adverse events were reported in year 2011 (reduced by 100%). In 2010, more than two fifths of the mild adverse events were gastrointestinal effects (n=30, 44.8%), followed by localised effects on the site of Chinese medicine treatment (n=15, 22.4%) and headache (n=7, 10.4%). The severe adverse events in 2010 were symptom aggravation (i.e. aggravation of patients' presenting complaint), fainting and swelling at the acupuncture site. During 2011, gastrointestinal effects remained the highest proportion of mild adverse events (n=11, 50.0%) and localised effects were the most commonly reported moderate adverse events (n=8, 44.4%; Table 3-29).

Table 3-29 Intensity of the identified adverse events

Nature of adverse events (n=135)	Year 2010, n (%)			Year 2011, n (%)		
	Mild [d] (n=67)	Moderate [e] (n=26)	Severe [f] (n=2)	Mild (n=22)	Moderate (n=18)	Severe (n=0)
Gastrointestinal effect [a] (n=54)	30 (44.8)	10 (38.5)	0 (0)	11 (50.0)	3 (16.7)	0 (0)
Localised effect [b] (n=30)	15 (22.4)	4 (15.4)	1 (50.0)	2 (9.1)	8 (44.4)	0 (0)
Symptom aggravation (n=21)	6 (9.0)	7 (26.9)	1 (50.0)	3 (13.6)	4 (22.2)	0 (0)
Headache (n=11)	7 (10.4)	2 (7.7)	0 (0)	1 (4.5)	1 (5.6)	0 (0)
Feeling hot (n=9)	6 (9.0)	2 (7.7)	0 (0)	0 (0)	1 (5.6)	0 (0)
Skin reaction (n=9)	5 (7.5)	1 (3.8)	0 (0)	2 (9.1)	1 (5.6)	0 (0)
Cardiovascular effect [c] (n=4)	3 (4.5)	1 (3.8)	0 (0)	0 (0)	0 (0)	0 (0)
Dizzy or fainting (n=6)	1 (1.5)	1 (3.8)	1 (50.0)	3 (13.6)	0 (0)	0 (0)
Drowsy or fatigue (n=4)	1 (1.5)	0 (0)	0 (0)	1 (4.5)	2 (11.1)	0 (0)
Others (n=5)	1 (1.5)	2 (7.7)	0 (0)	2 (9.1)	0 (0)	0 (0)

Intensity of adverse events were analysed by multiple response. Percentage was calculated based on total number of visits within mild, moderate and severe categories.

[a] Include nausea, vomit, diarrhoea, loose stool, bloating, indigestion, heart burn, reddish bowel motion, stomach pain, constipate.

[b] Include bruising, increase pain, tingling or needling pain after treatment, swelling.

[c] Include increase or decrease of blood pressure or experiencing palpitation.

[d] Events easily tolerated by the patients or causing minimal discomfort.

[e] Discomfort enough to interfere with daily activities.

[f] Requiring therapeutic intervention to manage the event.

3.3.7.3 Students Practitioners’ Response to the Adverse Events

As discussed in Chapter 3.3.8.1, adverse events were identified in 135 of the total 11,529 visits during 2010 and 2011. Actions taken by student practitioners (as documented in the medical records) to address these adverse events are presented in Table 3-30.

Of the 135 visits with adverse events, the most common response of the student practitioner was to change the Chinese medicine treatment (n=92 visits) by modifying the acupoint used or modifying the formula or dosage of the prescribed herbs. The response was largely followed reported gastrointestinal effect (n=32, 34.8%). In nine visits with adverse events, it was hard to determine because either no action was taken by the student practitioner or the action was not documented in the medical records. For the student practitioner response of stopping the suspected treatment and modifying the other treatment, the reported adverse events were diarrhoea after taking Chinese herb. Following the report of adverse events, the student practitioners stopped providing herb treatment and modified acupuncture treatment (with some changes of the acupoint; Table 3-30).

Table 3-30 Student practitioners' response following adverse events

Nature of Adverse Events (n=135)	Response of student practitioner to adverse events, n (%)			
	Modify Chinese medicine (n=92) [a]	Stop suspected causative Chinese medicine treatment (n=33)	No action taken (n=9) [b]	Stop the suspected Chinese herb treatment and modify acupuncture (n=1)
Gastrointestinal effect (n=54)	32 (34.8)	19 (57.6)	2 (22.2)	1 (100.0)
Localised effect (n=30)	21 (22.8)	3 (9.1)	6 (66.7)	0 (0)
Symptom aggravation (n=21)	18 (19.6)	2 (6.1)	1 (11.1)	0 (0)
Headache (n=11)	9 (9.8)	2 (6.1)	0 (0)	0 (0)
Feeling hot (n=9)	7 (7.8)	2 (6.1)	0 (0)	0 (0)
Skin reaction (n=9)	5 (5.4)	4 (12.1)	0 (0)	0 (0)
Cardiovascular effect (n=4)	3 (3.3)	1 (3.0)	0 (0)	0 (0)
Dizzy or fainting (n=6)	4 4.3)	2 (6.1)	0 (0)	0 (0)
Drowsy or fatigue (n=4)	3 (3.3)	1 (3.0)	0 (0)	0 (0)
Other adverse events (n=5)	1 (1.1)	3 (9.1)	1 (11.1)	0 (0)

Response of student practitioner to adverse events were analysed by multiple response. Percentage was calculated based on total number of visits within each response categories.

[a] Modifying provided Chinese medicine treatment includes modify the acupuncture point used in acupuncture treatment and/or modify formula of herb prescribed.

[b] No action taken refers to no action taken by student practitioner or action taken were not documented in the medical records.

3.3.8 Overall Treatment Outcome for Patients with Respiratory Disorders

There were some difficulties in assessing the overall outcome of Chinese medicine treatment in patients with respiratory disorders for several reasons. About 50% of the presenting respiratory disorders in 2010 and 2011 were for the common cold and cough. These patients either did not return to the Teaching Clinic after the initial visit due to the self-limiting nature of common cold and cough (typically persist for three to ten days [132]) or patients had a subsequent visit for the same conditions after several weeks or months. Before data abstraction, a coding scheme was devised to document the overall outcome of Chinese medicine treatment. The overall outcomes were examined in terms of energy, sleep, appetite and excretion, and this information was part of the routine questioning by the student practitioner in each consultation. Despite this, a lot of this information was incomplete or inconsistently documented in each patient's progress note, and it was not possible to analyse the overall treatment effects.

3.4 Discussion

3.4.1 Practice of Chinese Medicine in the Teaching Clinic

In the Teaching Clinic, Chinese medicine treatments (acupuncture, herb, cupping, massage and moxibustion) are provided by student practitioners under supervision of registered Chinese medicine practitioners. Before students are permitted to practice in the Teaching Clinic, they are required to pass a Clinic Entrance Exam in their third year. For Chinese medicine practitioners, the Chinese Medicine Board of Australia (the Board) began regulating Chinese medicine practitioners nationally since 1 July 2012. The Board was designated by Australian Health Ministers to regulate Chinese medicine under the Health Practitioner Regulation National Law Act. In line with the Act, new graduates are required to register with the Board as student practitioners to enable them to practice Chinese medicine (133).

A range of Chinese medicine treatments is provided in the Teaching Clinic, and patients have more choices of type of Chinese medicine treatment (similar to the Chinese Medicine Teaching Clinic of Sydney Institute of Traditional Chinese Medicine) compared with other teaching clinics in Australia, such as Endeavour College of Natural Health, Southern School of Natural Therapies, University of Technology Sydney and University of Western Sydney (113, 114, 116, 117). At the University of Technology Sydney, acupuncture and Chinese herb treatments are provided in separate operation hours (116). The Chinese Medicine Teaching Clinic at RMIT University, however, offers different types of Chinese medicine treatments within same operation hours. An advantage of having different types of Chinese medicine treatment within the same operation hours is that it is feasible to provide combination of Chinese medicine treatments (such as acupuncture and herb treatment) concurrently to the patients.

3.4.2 Demographic of Patients

In terms of demographic of patients visiting the Teaching Clinic, about two-thirds were female (65.7%), half were employed (50.7%) and more than one-third was 18 to 34 years old (37.2%; Table 3-2). In Victorian Population Health Survey 2010 conducted by Victoria Department of Health, found that more participants were female (51.1%) and employed (59.9%) [134]. These findings also concur with a previous national survey of CAM use in 2005 [30] and a recent systematic review that studied the public and medical professionals who use CAM [135]. The 2005 national survey of 17 forms of CAM use also revealed that females and older people more likely to seek Western medicine treatment [30]. The systematic review found that being female and middle-aged individual were predictors of using CAM. Other study found that females tended to be more discontent towards Western medicine and had similar philosophy as with CAM [136]. The lowest proportion of the Teaching Clinic patients was children and teenagers, this aligned with finding from a recent systematic review of investigating prevalence and pattern of CAM usage by the public [22] (Table 3-2).

Demographically, more female patients attend the Teaching Clinic, which is similar to other acupuncture studies in teaching clinic, university and hospital settings [137-141]. These earlier studies also reported that most of the patients were employed [137-139] and had an average age of 50 years old [140-142]. The current study, however, found that the patients in the Teaching Clinic were predominantly aged between 25 to 34 years old (mean age 42.1±18.1 years) and students. This was similar to the study by Grabowska and colleagues, and is understandable because the clinic is located within a university [143]. The discounted treatment fee may encourage this group of patients to visit the Teaching Clinic.

It is worth noting that about half of the patients (50.4%) had selected the Teaching Clinic to have their first experience of Chinese medicine treatment; this is similar to the findings of a study that assessed treatment outcomes in an acupuncture teaching clinic in US [137]. Learning the reasons why this group of patients choose Chinese medicine treatment and the Teaching Clinic as the site for their initial treatment would be interesting in understanding the behaviour of Chinese medicine patients.

This study found that a higher proportion of Australian-born patients visited the Teaching Clinic than patients born overseas (Table 3-2). Of the patients born overseas, over one-third (36%) were from Asian countries (such as China, India, Malaysia, Korea and Taiwan; Table 3-3). The finding was different from a systematic review found that CAM usage was high in Asian countries such as Japan, South Korea and Malaysia [(22)].

3.4.3 Frequency of Visits to the Teaching Clinic

For the mean number of visits to the Teaching Clinic, statistically significant differences were observed between patients of different age groups, occupations, locations and regions of residence. Older patients visited the Teaching Clinic more frequently than younger patients (Table 3-10). This finding is similar to that of Cooper's study on acupuncture patients in an acupuncture teaching clinic in US [121]. The study found that patients over 55 years old were more likely to have at least five visits to the acupuncture clinic. Similarly, the current study found that patients aged 65 years and above having the highest mean number of visit (M=9.2±9.8; Table 3-10).

Generally, patients who were not working (which includes the category domestic duties, unemployed, pensioner or retiree) had a higher mean number of visits compared with other occupations ($F(8,367.9)=4.0$, $p<0.01$). Cheaper consultation fees and herbal medicine charges (compared with a normal Chinese medicine clinic) and discounted consultation fees for pensioners may explain the reason this group of patients visited more frequently than other occupation.

Analysis of the demographic characteristics of patients attending the Teaching Clinic showed that, of the total 1,677 patients in 2010 and 2011: there were more female (65.7%) than male (34.3%); and there were more Australian-born patients (66.2%) than overseas-born patients (33.8%; Table 3-2). In terms of mean number of visits, there was no statistically significant difference between patients of different gender and country of birth (Table 3-10).

3.4.4 Presented Common Conditions

The findings of musculoskeletal and pain disorders and emotional disorders (Figure 3-1) being the most common conditions for which Chinese medicine treatment was sought are consistent with four studies at other acupuncture clinics. Two of the studies were performed in acupuncture teaching clinics [121, 139], one study was conducted in a university-based acupuncture clinic [143] and another study was conducted in a community acupuncture clinic [144]. The co-location of chiropractic and osteopathy teaching clinic within the same building of Chinese Medicine Teaching Clinic, RMIT University may also contributed to musculoskeletal and pain disorders being the most common condition in the Chinese Medicine Teaching Clinic. Similar to Australian general practice clinics, musculoskeletal and pain disorders, emotional disorders and respiratory disorders were among the top 10 health conditions treated by the general practitioner between 2010 and 2011[4]. The current study found that obstetric and gynaecological disorders were the third most common conditions for which Chinese medicine treatment is sought. As with the earlier studies on acupuncture clinics, apart from pathologic conditions, the Teaching Clinic also provided treatment for non-pathologic conditions [137, 138, 143], such as weight loss (180 visits), general wellbeing (148 visits) and smoking cessation (40 visits).

As shown in Table 3-17, patients generally (61.2% in 2010; 66.7% in 2011) had three or more other medical conditions. The finding was consistent with a study of patients in a university-based CAM centre. The study suggested that CAM treatment which emphasises a holistic approach may be more helpful for patients with multiple medical conditions [145]. For patients with no other medical conditions (5.1% in 2010; 1.5% in 2011), it is possible that these patients either had good health or the information on other medical conditions was not recorded on the initial visit.

3.4.5 Provided Chinese Medicine Treatment

In terms of pattern of Chinese medicine treatment, acupuncture (including traditional acupuncture, ear acupressure, laser and scalp acupuncture) either alone (Table 3-14) or in combination (Table 3-13) with other treatments was most often provided. Acupuncture treatment was provided in over 90% of visits (Table 3-13), and traditional acupuncture was usually combined with other treatments, such as herb, massage and cupping (Table 3-15). Among acupuncture treatment, laser (n=20), scalp acupuncture (n=1) and ear acupressure (n=1) were less commonly provided as single treatments than traditional acupuncture (Table 3-14) in 2010 and 2011; instead they were mostly offered together with traditional acupuncture in the same visit.

Analysis of the types of Chinese medicine treatment provided in the Teaching Clinic found that there were 16 visits during 2010 and 2011 in which no treatment was provided (Table 3-13). Of these 16 visits, details of Chinese medicine treatment in five visits were not documented or the pages of Chinese medicine treatment details were missing from the medical records. In another six visits, patients were referred to a general practitioner or emergency department due to the nature or severity of the primary complaint. The primary complaints were: abdominal pain for three years; vomit for 10 days; menorrhagia; kidney pain for eight days; throat nodule for one year; and calf swelling for five weeks. In four visits, treatment was not prescribed due to the nature of the primary complaint and patients' condition, and Chinese medicine treatment was deemed not suitable for the patients. These patients had: warts for years; metorrhagia; irregular menstruations for six years and having dysmenorrhoea at the time of visit; felt unwell because of atopic dermatitis. Although these patients had not prescribed with acupuncture, herbs, massage, cupping or moxibustion treatment, advice on diet and lifestyle may be provided by the practitioner but unrecorded in the medical records. For another patient who was one month pregnant and had history of miscarriage, the practitioner advised the patient to seek Chinese medicine treatment for supporting pregnancy after first trimester.

During patients' initial visit to the Teaching Clinic, patients were asked to complete some administration forms including questions on Chinese medicine treatment that patients preferred not to have. It is essential to ask about the preference of type of Chinese medicine treatment to aid determining the suitable Chinese medicine treatment for patients. The other reasons for inquiring were that the patient may have an allergy to certain treatments, or that the other concurrent treatment which patients have may interact with Chinese medicine treatment.

Other than seeking Chinese medicine treatment in the Teaching Clinic, patients also had or concurrently sought other treatment modalities such as chiropractic, osteopathy, physiotherapy, massage, reflexology or naturopathy (Table 3-16). Similarly, other studies in acupuncture clinics also reported history of their patients using other type of CAM and Western medicine [138, 143]. In the current study, chiropractic and osteopathy were the top two concurrent treatment types. This may because of the teaching clinic for Chinese medicine, chiropractic and osteopathy co-locate within the same building, and these teaching clinics could cross-refer patients among them. Similar to the Chinese Medicine Teaching Clinic, the osteopathy and chiropractic teaching clinics offer treatment at discounted fee. There is a possibility that because of the discounted fee and convenience, a higher percentage of Chinese medicine patients had osteopathy and chiropractic treatment than other type of treatment (Table 3-16).

3.4.6 Presented Respiratory Disorders

The findings of respiratory disorders as among top five conditions (Figure 3-1) managed in the Teaching Clinic was consistent with a study which audited the practice of a university-based acupuncture clinic in London, UK [143]. However, other studies on the practice of acupuncture clinics did not identify respiratory conditions as one of the common conditions managed [144, 145]. In terms of types of respiratory disorders, the common cold and asthma were the most frequent (Table 3-19), similar to the patterns of conditions managed in Australian general practice clinics [4].

Of the few studies that examined the conditions managed in Chinese medicine clinics [143-145], only Cooper and colleagues [121] reported the duration of primary complaints. The current study found that patients with respiratory disorders of less than two weeks duration (n=244 visits) visited the Teaching Clinic the most (Table 3-20), while Cooper's study found that patients with complaints of one to three months or more than a year duration visited the clinic the most [121]. The difference may due to the sampling criteria: Cooper's study did not sampled students into their study, whereas this current study included students as sample. Students paid discounted treatment fee that may influence when do they sought Chinese medicine. Furthermore, Cooper's study observed that 50% of their patients had musculoskeletal disorders, which may had different duration of complaint compare to respiratory disorders.

Disorders can be categorised as acute and chronic. Chronic disorders are described as disorders that: continue over a prolonged period; progress gradually over time; have several risk factors and a complicated cause and effect relationship; and causes loss or defect in body function [146]. Examples of chronic respiratory disorders are allergic rhinitis, asthma and COPD [2]. Acute disorders are disorders that occur abruptly and are generally serious [147]. Respiratory disorders such as pneumonia, influenza and respiratory infection are considered acute respiratory disorders. Some disorders, such as bronchitis and sinusitis, can be either acute or chronic, depending on the duration of the disorder [8]. Sinusitis that has been experienced for less than one month is classified as acute sinusitis; and for more than two months as chronic sinusitis [148].

From 2010 to 2011, the acute respiratory disorder that most frequently presented to the Teaching Clinic was the common cold (234 visits). The common cold was mostly presented by female (67.1%), aged from 18 to 34 years old (54.7%) and students (51.3%; Table 3-22). It is possible that because the Teaching Clinic is located within university campus and opens on weekdays that it is more accessible to students.

Visits for allergic rhinitis (157 visits) and asthma (64 visits) were the chronic respiratory disorders most frequently presented in the Teaching Clinic in 2010 and 2011. Demographically, allergic rhinitis was mostly presented by female (61.1%), aged from 18 to 34 years old (41.4%) and students (30.5%; Table 3-22). In the Teaching Clinic, the pattern of patient characteristics for allergic rhinitis was similar to patients with common cold.

3.4.7 Treatment for Respiratory Disorders

Chinese medicine treatment applies a holistic approach whereby patients are treated as a whole person, taking into account the patients' whole condition (i.e., body, mind and spirit) and environment [20]. Other than acupuncture, herb, cupping, massage and moxibustion treatment, advice on lifestyle and healthy behaviour (such as diet and physical activity) was also provided to the patients as part of the visit [27]. Patients presenting with a respiratory condition as their primary complaint may have had another medical condition as their secondary complaint. Depending on the patients' condition, the practitioner also provides Chinese medicine treatment to address the secondary complaint.

In the Teaching Clinic, visits for acute respiratory disorders were mostly for the common cold. Yin Qiao San (n=30 visits, 41.7%) and Sang Ju Wan (n=12, 6.7%) were the most common manufactured herb prescribed for the common cold (Table 3-26). Yin Qiao San is a formula with a good action of: releasing the exterior; relieving body aches; and expelling wind-heat and toxic heat. Whereas Sang Ju Yin treats cough better with a milder action of: expelling wind-heat and toxic heat; and relieving body aches [35]. Yin Qiao San formula consists of Yin Qiao, Jin Yin Hua, Lian Qiao, Niu Bang Zi, Dan Dou Chi, Lu Gen, Jie Geng, Bo He, Jing Jie, Dan Zhu Ye, Gan Cao. Sang Ju Yin formula contains Sang Ye, Jie Geng, Lu Gen, Xing Ren, Lian Qiao, Ju Hua, Gan Cao and Bo He.

A Cochrane systematic review examined the effectiveness and safety of Chinese herbs for common cold [18]. The review included 17 randomised controlled trials that tested different Chinese herb preparations through oral, intravenous, topical and rectal administration. The trials, however, did not directly include the commonly prescribed manufactured herbs in the Teaching Clinic (Table 3-26). Of the 17 trials in the review, 10 trials described the contents of the oral preparations used. Single herbs included in the oral herb preparations in the trials were Huang Qin (n=4 trials), Chai Hu (n=3 trials), Ge Gen (n=3 trials), Xing Ren (n=3 trials), Lian Qiao (n=3 trials), Shi Gao (n=3 trials), Gan Cao (n=2 trials), Jin Yin Hua (n=2 trials), Sang Ye (n=1 trial) and Jing Jie (n=1 trial) [(18)]. This was similar to the pattern of single herbs (raw and granule herb) prescribed in the Teaching Clinic for the common cold. Similarly to the review, the single herbs Gan Cao (n=60 visits), Lian Qiao (n=48) and Xing Ren (n=39) were also frequently used in the common cold formula (Table 3-27). Additionally, some of the herbs composition in Yin Qiao San and Sang Ju Wan (for example Jin Yin Hua, Lian Qiao, Jing Jie, Gan Cao, Xing Ren and Sang Ye) were part of the tested formula [(18)].

Asthma was among the chronic respiratory disorders that commonly presented to the Teaching Clinic. Acupuncture treatment for asthma usually applied a combination of acupoints. The acupoints that were frequently applied in traditional and laser acupuncture treatment for asthma in the Teaching Clinic were: EX-B1 (n=36 visits, 56.3%), BL13 (n=35 visits, 54.7%), ST36 (n=35 visits, 54.7%), LU7 (n=25 visits, 39.0%) and SP6 (n=23 visits, 35.9%; Table 3-25). In a Cochrane systematic review on acupuncture for asthma, the types of acupuncture included traditional, laser and ear acupressure [(37)]. Of the 12 randomised controlled trials in the review, nine used standardised acupuncture formula (single point or combination of points) on participants. Acupoints (traditional and laser acupuncture) that were predominately used in the nine trials were: BL13 (n=7 trials), CV17 (n=6 trials), EX-B1 (n=6 trials), LU7 (n=5 trials), LI4 (n=5 trials), ST36 (n=4 trials) and SP6 (n=3 trials). Another randomised controlled trial investigated the additional benefit of acupuncture in warded adults and children with asthma. Participants in the treatment group received a combination of acupuncture and Western medicine treatment. The acupoints used in the trial were common acupoints (as used in the Teaching Clinic): BL13, LU7, CV17, ST40, KI6, LI11, BL42 and ST41 [(149)]. The choice of acupoints in the Teaching Clinic aligned with the acupoints in the textbook by Maciocia [(35)] and were similar to the acupoints in the review [(37)] and in the randomised controlled trial [(149)].

3.4.8 Overall Treatment Outcomes for Respiratory Disorders

As discussed in Chapter 3.3.9, assessment of treatment outcomes could not be carried out because there was incomplete or inconsistently documented data on outcome-related information (such as patients' energy, sleep, appetite and excretion) and there were difficulties in assessing overall outcomes for patients who either did not return for any treatment or had visits weeks or months apart. As Shahraz and colleague noted in their study of quality of acute myocardial care in a hospital, it is hard to relate process data (such as Chinese medicine treatment) with outcome data (such as overall treatment outcomes) when follow-up visits are insufficient (150).

Because data on patients' treatment outcomes were incomplete or inconsistently documented in medical records in the Teaching Clinic, questions on patients' overall outcome will be included in the next data collection tool, which is a survey questionnaire (Chapter 4). Some studies based on medical record review also used a survey questionnaire to complement incomplete medical record data (103, 104).

Instead, the remainder of this section will discuss the outcome from Chinese medicine treatment from published systematic review and clinical trials on respiratory disorders.

A Cochrane systematic review on Chinese herbs for common cold found that herbs may relieve symptoms (18). Of 17 trials included in the review, six herb preparations cleared the symptoms faster than the control treatments; one preparation lessened the duration and severity of symptoms more than the control treatment; five herb preparations had better partial improvement (i.e., reducing fever and clearing symptoms); and one herb preparation cleared fever faster than the control treatments (18).

Besides the above systematic review, one cohort study (151) and a trial (152) included one of the common prescribed manufactured herbs used in the Teaching Clinic. These trials specifically tested the combination of Sang Ju Yin (i.e., the liquid form of Sang Ju Wan) and Yu Ping Feng San in treating influenza [151, 152]. The trials examined the effect on immune response [152] and preventing influenza-like infection [151]. During the epidemic severe acute respiratory syndrome in Hong Kong, at-risk hospital staff were offered the herb combination of Sang Ju Yin, Yu Ping Feng San, Da Ying Ye and Huang Qin daily for two weeks [151]. At the study end-point, none of the participants in the treatment group had severe acute respiratory syndrome, while 0.4% of control group were infected severe acute respiratory syndrome. The herb preparation also improved influenza-like symptoms (feeling cold, cough, tired and headache); mental health and quality of life; and immune response such as raising the lymphocyte CD4/CD8 ratio [151]. Another trial examined the effect of herb combination Sang Ju Yin and Yu Ping Feng San and supported the findings on the immune response and none of the trial participants became infected with severe acute respiratory syndrome. Similarly, participants were hospital staff who consumed the herb preparation daily for two weeks [152].

Acupoints EX-B1 (n=36, 56.3%), BL13 (n=35, 54.7%), ST36 (n=35, 54.7%), LU7 (n=25, 39.0%) and SP6 (n=23, 35.9%) were most commonly used in the Teaching Clinic to manage asthma. In a Cochrane systematic review on acupuncture for asthma, one of the trials described the basis for selecting the acupoints: EX-B1, BL13 and SP6 for their anti-asthmatic effects; and ST36 for its anti-inflammatory effect, anti-allergic and antihistamine properties [37]. The textbook Maciocia discussed that the acupoints EX-B1 was used to cease acute asthma; and BL13 and LU7 were applied to revive the descending flow of lung Qi [35]. The acupoints ST36 and SP6 were used in managing wind-cold (with sweating) type of asthma in order to accord Nutritive and Defensive Qi [35].

Several acupuncture trials on patients with asthma found beneficial treatment outcome. For warded participants with asthma, participants were randomised to either Western medicine management alone or combination of acupuncture and Western medicine [149]. Participants in the treatment group received 12 acupuncture sessions over four weeks. At follow-up, the treatment group had better peak expiratory flow and were less anxious about their conditions and daily activities than the control group [149]. In another quasi-experimental trial, children in the treatment group were given 20 minutes of acupuncture once a week for eight weeks [153]. Compared with the control group, the treatment group had better forced expiratory volume and less activity limitation at follow-up [153].

3.4.9 Adverse Events Identified in the Medical Records

Every type of medicine (even Western medicine) and treatment has benefits and risks for harm (which may result in adverse event in patients) [154]. Yet the risk of adverse events experienced by the patients in the Teaching Clinic has not been examined. Assessing the nature and frequency of adverse events in the Teaching Clinic provided insight into the occurrence of the adverse events. This understanding is necessary to implement measures to lower or prevent these events [32]. Following the occurrence of an adverse event, it is important for practitioners to identify and then manage the events. Of 135 visits with adverse events, there no action was taken by the practitioners in 9 visits. This was possibly because practitioners have different perceptions of adverse events and did not perceive the events as adverse [155]; or possibly because the practitioners did not record the interventions which they performed to address the adverse events.

Of 153 adverse events in 2010 and 2011, there were three severe adverse events that involved two patients (Table 3-29). One patient had visited the Teaching Clinic for wrist pain. Following acupuncture treatment, the patient had more swelling (i.e., symptom aggravation) on fingers and bruising (localised effect) at the acupuncture site. The patient had severe pain and was unable to move his or her fingers. Another patient had night sweats, felt dizzy and faint after taking Chinese herbs and required an ambulance to take him from home to the hospital. Following the incident, the practitioner modified and lowered the prescribed herb in the patient’s subsequent visit.

In this study, the frequent adverse events were mild to moderate gastrointestinal symptom (such as loose stool, nausea or vomiting; Table 3-28). This finding was similar to a UK national survey examining the safety of Chinese herbs [156] and an Australian survey on the safety of Chinese medicine treatment (acupuncture and Chinese herbs) [32]. Both studies reported that the common adverse events related to Chinese herbs were diarrhoea, nausea, vomiting and abdominal pain. These studies also reported the severity as severe and mild [32, 156]. The Teaching Clinic provides herb treatments in the form of raw and granule (which were made of concentrated extract and excipients) [157]. Aware that adverse events may arise from either the concentrated extract or the excipients, dextrose and starch are used as excipients in preparing granule herbs in the Teaching Clinic. Those two excipients are preferred as they are suitable for patients with lactose intolerance [157].

However, adverse events such as symptom aggravation need to be interpreted with caution because a review found majority cases of symptom aggravation have recovered afterwards [158]. This suggested "healing crisis", which first temporarily worsen patients' presenting symptom and followed by symptom alleviation [158]. To differentiate if it is symptom aggravation of "healing crisis", the practitioners could assess the severity of patients' existing symptom on patients' each visit and monitor their progress.

The adverse events that patients had may not necessarily from Chinese medicine, as it may result from interaction between Chinese herbs with Western medicine. Some Chinese herbs may intervene with body's drug transporters and metabolism enzymes, which then disrupt the Western medicine's metabolism and thus modify its action [44]. For example, Chinese herb *Ma Huang* may intensify the action of clonidine [44] (i.e. a medication to treat hypertension and migraine[159]) and reduce the actions of guanethidine [44] (i.e. a medication used in hypertensive crisis [160]). Therefore to reduce adverse events, practitioners need to be informed of what medications have been taken by the patients. In addition, Chinese medicine practitioner' knowledge of Western medicine especially pharmacology may assist in reducing the risk of patients taking concurrent Chinese herbs and Western medicine [161].

3.4.10 Comparison with other Australian Chinese medicine teaching clinic

Because Meier's study (from University of Technology, Sydney, UTS) is the only earlier Australian study on Chinese medicine teaching clinic, this section compared the findings between the Chinese medicine teaching clinics of RMIT University and UTS. This is to provide context on practice of Australian Chinese medicine teaching clinic.

RMIT University records patients' clinical and personal data in manual medical record (i.e. paper-based), and transfer patient's personal information to the electronic appointment booking system. Clinical data are entered as free-text in the manual medical record. Conversely, UTS adopts electronic medical record to document part of patients' clinical data and keep patients' personal data manually[(162)]. Patients' clinical data that are kept in electronic medical record include primary and secondary complaints, patients' symptom, Chinese medicine diagnosis, provided treatment and patients' improvement. UTS utilizes standardized traditional Chinese medicine diagnostic vocabulary and the International Classification of Primary Care in documenting symptom and disease uniformly [(162)].

Meier's study presented the findings of random audits on 5,735 records on patients' demographic and health complaint in 1998 to 2002. Similar to the findings of this current study, nearly two thirds of patients were female (RMIT=65.7%; UTS=61.3%). Comparing patients from different age groups, patients between 25 to 44 years old visited both teaching clinic the most (RMIT=34.7%; UTS= 60.6%) and patients over 65 years old visited the least (RMIT=11.9%; UTS=5.5%).

There are some similarities in pattern of presenting complaints in both clinics. Both teaching clinic had the same top primary complaints, which was musculoskeletal disorders. The other common primary complaints in RMIT University were emotional disorders, obstetrics and gynaecology disorders, respiratory disorders, and gastrointestinal disorders. Whereas in UTS, besides musculoskeletal disorders, general [unspecified] disorders,, gastrointestinal disorders, psychological disorders, and respiratory disorders [162]. The difference was that: obstetrics and gynaecology disorders was not among the top five common chief complaint in UTS; and general [unspecified] disorders was not listed as one of the most common chief complaints in RMIT University.

3.5 Project Limitation and Recommendation

3.5.1 Project Limitation

In performing this first stage of data collection (which reviewed medical records in the Chinese Medicine Teaching Clinic, RMIT University), limitations when collecting, analysing and interpreting data were noted.

In collecting data from medical records in the Teaching Clinic, difficulties faced were illegible handwriting and missing or incomplete data on information related to patient demographic information, progress and treatments. The indicators for quality of care that were examined in this study were the type and detail of the Chinese medicine treatment and overall outcomes. However, overall outcomes from Chinese medicine treatment could not be assessed due to incomplete or non-standardised data documentation. In a review discussing difficulties in abstracting data from Chinese medicine medical records, Liu and colleagues (72) asserted that inadequate outcome-related data was common, especially in outpatient setting of Chinese medicine practice. This data insufficiency could be addressed by introducing outcome-related data in medical records (for example health-related quality of life, disease-specific scales and patient-based measurements) (72); or assessing the treatment outcome periodically to improve the quality of documented data (163).

All patients data (including demographic, sign and symptom, primary complaint, Chinese medicine diagnoses, syndrome differentiation, treatment intervention) were recorded as free-text in the medical records of the Teaching Clinic, and abstracting data from free-text is labour intensive (72). Furthermore, free-text in Chinese medicine medical records has been recognised as a leading challenge in analysing large datasets (164). To improve the data structure in Chinese medicine medical records and ease data abstraction, Liu and colleagues suggested documenting Chinese medicine consultations and management using structured data entry and symptom-based clinical terminology systems, for example, the International

Classification of Primary Care-2. Structured data entry may include documentation templates and structured fields in electronic medical records. The proposed structure of medical records will remove the laborious effort of retrieving free-text data from medical records [(72)].

The data on patients' primary complaints and other medical conditions were retrieved as reported by the patients. This could be less precise because patients may over-report; and for patients with poor health literacy, they could misinterpret or did not have proper understanding about their health conditions [(165)]. More precise evidence of patients' primary complaints and other medical conditions would be documented such as medical examination report and referral letter from medical practitioners. However, not all patients prepared these documents when visiting the Teaching Clinic.

The nature of Chinese medicine data makes the analysis challenging. For example, patients may receive a combination of Chinese medicine treatments to address one presenting primary health conditions (and secondary conditions). The multi-relational nature of Chinese medicine data, such as patients' primary complaint, diagnosis, Chinese medicine treatment are linked to each other in various ways. Multi-relational nature of the data complicates statistical analysis.

3.5.2 Recommendation to Existing Data Collection Tool

3.5.2.1 Patient Information Sheet

Periodic revision of the data collection tool is necessary to improve the quality of entered data and to capture data that are relevant to patients' treatment. Listed are some suggested changes to be made to the Patient Information Sheet (Appendix C), which the patients fill it in during their initial visit to the Teaching Clinic.

- A column for patients to write down their special requirements/precautions in getting
  - a) Chinese herb treatment, if the patient is: vegetarian? (then need to avoid prescribing herb from animal origin); any allergy or intolerance towards certain foods such as nut, gluten, lactose, seafood, herbs? (then need to avoid prescribing herb which contain these ingredients)
  - b) acupuncture treatment, if the patient has: blood-borne disease or bleeding problem (need to be cautious when performing acupuncture)?; alcohol intolerance (if the usage of alcohol swab is fine with the patient)?; pacemaker or other prosthetic medical device (which doing electro-acupuncture is not suitable for the patient)?
- A column for patients to write down the name of current intake of Western medicine as Chinese herbs may interact with the Western medicine, for instance co-use of blood thinning agents (such as warfarin, aspirin) with Dang Gui can enhance the blood thinning effect which lead to bruising and bleeding problem [166]. Thus, to provide quality and safe Chinese herbs treatment, this information need to be updated periodically. Rephrase inquiring on patients' treatment preference such as asking patients to rate the Chinese medicine treatment (such as acupuncture, granule herb, raw herb, cupping, moxibustion and massage) from most favoured to least favoured.

3.5.2.2 Electronic Medical Records

The Teaching Clinic uses manual medical records to document the progress and treatment of patients and there are some drawbacks related to manual medical records. Progress notes are kept in loose paper form, and more time is spent on managing the file and bookkeeping. The task include retrieving medical records, searching for patients' past history, maintaining paper flow sheets and so on [(167)]. As part of the institution policy, medical records from earlier years are archived and data from these earlier medical records are less accessible for practitioners at the point of care. Abstracting data from manual medical records can be challenging due to illegible handwriting and the difficulty locating data in manual medical records [(168)].

It is suggested that an electronic medical record system be adopted in the Teaching Clinic. Ideally, an electronic medical record system can store administrative and clinical data, but also include financial functions (such as payment procedures) and link with filling and dispensing herbs to the patients. A comprehensive electronic medical record system can assist monitoring of treatment safety by cross-checking that student practitioners are filling the right herb and the right amount; and dispensing to the correct patients.With electronic medical records, practitioners can retrieve not only patients' most recent data but can easily access earlier complete of medical records. The electronic medical records system can be equipped with decision support which reminds practitioners to assess necessary indicators (e.g., pain scale, counselling) and fostering it to become part of the workflow [(60)]. By implementing electronic medical records, patients' data can be grouped according to disease, procedure and other categories. These collective data can be generated for clinical research, process improvement or other administrative and clinical purpose. Furthermore, electronic medical records helps the institution in saving money (in terms of paper storage, filing cost) and time (to retrieve physical record) [(167)]. Electronic medical records are also more environmentally friendly because the data is kept digitally, not in paper bound. A systematic review on effect of electronic medical records on patients' outcome suggested that electronic medical records implementation improved structure and process of care provided [169].

However, electronic medical records also have several drawbacks. A systematic review on the effect of electronic medical record on primary care found that the issue with electronic medical records included concern of privacy and confidentiality, malfunction of software or hardware and interference with patient-practitioners rapport [169]. The electronic medical records system could also occasionally have downtime (because of power supply, system maintenance or software upgrade) and the staff inconveniently would resort to manual medical record while waiting the system to refunction [170].

Another concern of electronic medical records is that most of the system design caters for Western medicine use. Because the clinical practice of Chinese medicine (for instance Chinese medicine diagnosis and treatment) is distinct from Western medicine, therefore it is essential to tailor an electronic medical record system specially for Chinese medicine practice [171]. Another point to consider in designing an electronic medical record system is to enable it to cater for research, as well as administrative (include billing diagnosis, insurance status, hospital charges) and clinical purposes [107].

3.5.2.3 Documentation of Adverse Events

In the Teaching Clinic, adverse events were recorded as part of the progress notes. There was no separate section in the medical records for practitioners to record patients' adverse events towards Chinese medicine treatment. To monitor the safety aspect of Chinese medicine treatment, it is suggested to include a section for adverse events reporting. Previous study promoted that improving medical records design as such can reduce undetected reports of adverse events and foster effective monitoring [(172)].

The student practitioners had learned in the classroom about the common adverse event from Chinese medicine treatment, the management of the adverse events and precaution required when providing the treatment. The knowledge and requirement of reporting adverse events from Chinese medicine to Therapeutic Goods Administration (TGA), Australia (through Blue Card or online) was taught. In the Teaching Clinic, the student practitioners reported the severe adverse events (such as needle-prick injury and fainting) to supervised registered practitioners. Then the supervised practitioners lodged online incidence report in Occupation Health and Safety Management System for further investigation.

The value of recording Chinese medicine adverse events lies in enabling safer practice and also for learning about the occurrence of adverse events. Wu and colleagues have proposed types of data that needed to be incorporated in Chinese medicine adverse events report or summary [(173)]. The proposed adverse events report is to include: nature and type of adverse event; detail of Chinese medicine treatment (such as name, method of administration, treatment duration, concurrent medications); demographic and risk factors of patients; verification that the adverse event resulted from Chinese medicine; and action taken to address adverse events. These proposed data may help in identifying adverse events, managing and disseminating reports of adverse events [(173)].

3.6 Conclusion

To date, a few studies have examined the characteristics and common conditions of patients presenting to Chinese medicine teaching clinic in US [121, 145]. However, in Australia the only published study is the morbidity study reported by Acupuncture Clinic, University of Technology, Sydney [162] and for the Chinese Medicine Teaching Clinic, RMIT University, such studies have not been undertaken.

In an effort to identify patients with respiratory conditions, all paper-based medical records throughout the study period were reviewed and provided data on the characteristics and common conditions of patients visiting to the Teaching Clinic. Demographically, the mean age of patients were 42.1±18.1 years old and were mainly female (65.7%) and born in Australia (66.2%). The patients of the Teaching Clinic were from a variety of occupation with students (28.3%) being the most frequent.

Through data abstracted from medical records, characteristics of patients who visited the Teaching Clinic were able to be identified. Patients who are older, unemployed and lived in metropolitan area of Victoria tend to visit the Teaching Clinic more often. Conditions which were commonly treated in the Teaching Clinic were musculoskeletal and pain disorders (n=5,407 visits), emotional disorders (n=1,290 visits), and obstetrics and gynaecological disorders (n=946 visits). These findings were similar to conditions presented at other teaching clinics (located at US and UK) as well as at Australia general practice clinic.

The types of respiratory conditions presented to the Teaching Clinic were similar to Australia general practice clinic, with visits for common cold most common. In treating respiratory conditions, acupuncture (98.6% in 2010; 96.9% in 2011) was frequently provided compared to other Chinese medicine treatment.

As there has been no previous study at the RMIT Chinese Medicine Teaching Clinic to generate profile of patients and examine the presented health conditions and treatment provided, this study finding benefited the Teaching Clinic and patients. The findings of this current study is similar to the teaching clinic in elsewhere, however the generalization of these findings to overall Chinese medicine practice in Australia require further investigation. Knowing the characteristics and conditions presenting to the Teaching Clinic provides an opportunity to compare patients to other community, university and general practice settings. In addition, the above understanding aids in marketing of the clinic and attracting patients to come for multiple treatment sessions.

Quality of care can be measured through a range of indicators and one of them is appropriate treatment. Practitioners provided Chinese medicine treatment by taking account patients' condition: practitioners referred patients (who deemed require medical intervention) to general practitioners or emergency department (as discussed in Chapter 3.4.5). The findings on provided Chinese medicine treatment were discussed in light of systematic review on Chinese medicine treatment for respiratory disorders and textbook which has been used in the teaching (as discussed in Chapter 3.4.7). The provided Chinese medicine treatment was aligned with the textbook (used in teaching), showed that the theory that students practitioners learned in classroom was put into practice in the Teaching Clinic.

Reviewing medical records give insight on the Chinese medicine practice and patients' characteristic in the Teaching Clinic, beneficial for priority setting in development of practice and research. The findings could assist practice development by improving curriculum design, clinical learning, teaching practice and documentation of medical records. This current study described the patients' demographic, common disorders presented, patients' co-use of other treatment modalities, experienced adverse events and provided Chinese medicine in the Teaching Clinic. These findings facilitate in identifying research needs, ranging from demographic to research related to quality and safety of provided Chinese medicine treatment. Educators may emphasize more on the management of common disorder into the learning, to prepare the student practitioners for their clinical training. Understanding on other available treatment modalities and management of co-use treatment (such as patients may co-use Western medicine and Chinese medicine) could be incorporated into the curriculum, for patients to obtain optimum therapeutic benefit and to prevent interaction of different treatment modalities.

CHAPTER 4. A SURVEY ON RESPIRATORY PATIENTS PRESENTING TO A TERTIARY CHINESE MEDICINE TEACHING CLINIC

4.1 Background

4.1.1 Rationale of Conducting a Survey Study

As discussed in Chapter 1, this thesis aimed to: 1) determine the demographic profile and common conditions of patients presenting to the Chinese Medicine Teaching Clinic at RMIT University; 2) identify adverse events from Chinese medicine treatment as reported by the patients; 3) in patients with respiratory disorders, describe the treatment outcomes, prescribed treatment interventions; and 4) in patients with respiratory disorders, assess the level of knowledge and compliance with Chinese medicine treatment. The first, second and third aims were addressed in Chapter 3, by collecting data from the Teaching Clinic. The fourth aim is covered in this Chapter.

Practitioners in the Teaching Clinic frequently recorded treatment outcomes such as energy, sleep, appetite, excretion and phlegm production. However, these observations were inconsistently documented in the medical records (as discussed in Chapter 3.3.9). Furthermore, about 50% of patients who presented with respiratory disorders in the Teaching Clinic had acute conditions (for example, common cold and cough). These patients either did not return for a follow-up visit or had another visit several weeks or months later, and this could have been for a different condition. As a result, it was difficult to assess the third study aim: the outcomes that the patients experienced following Chinese medicine treatment. Earlier medical record-based studies had identified this limitation of inconsistent and missing data [69, 78] and had addressed this by using survey questionnaires to capture these data [103].

Generally, research on the quality of care provided in a healthcare setting is based on structural, process or outcome data [70]. The third and fourth study aim focused on outcome data and assessed patients' treatment outcomes and compliance with treatment. Although the Chinese Medicine Teaching Clinic, RMIT University has been operational and offering Chinese medicine treatment since 1993, outcome research had yet to be conducted in this setting. One previous study [137] pointed out that research on outcome data is also essential in a teaching clinic setting, in particular, for evaluating the experience of student practitioners in relation to practical training, and for surveying the treatment progress and experience of patients attending the teaching clinic [137].

In managing respiratory disorders, in addition to the treatment provided, other factors such as compliance with treatment [174] and knowledge of the disease [175] affect the treatment outcome. Knowledge of the disease and treatment has been associated with patients' compliance with treatment and their attitudes towards the disease management and the correct use of medication [176]. An intervention study found that, by educating patients on asthma disease and management, not only did the patients' knowledge of the disease and its management improve, but patients were also more compliant with their treatment [177]. These factors, in turn, contributed to improving outcomes, specifically reducing the number of visits to emergency departments and the number of hospitalisations [177]. Therefore, patients' compliance with treatment and knowledge of the treatment were both included in this survey. To improve the management of respiratory disorders, identifying and assessing patients' knowledge and compliance are essential so that areas of insufficiency can be remedied.

Dillman, cited in McColl et al. [178] suggested that information on opinion (such as the patients' overall outcomes from Chinese medicine treatment), knowledge, attitudes and reasons (such as sharing information on medicine used by patients with health practitioners) can be acquired using survey questionnaire [178]. In the current survey, information was also obtained from patients on adverse events (particularly the verification and disclosure of adverse events). In brief, a survey was conducted to complement the data obtained from the medical records review and to address the unmet study objective. The survey questionnaire covered: overall treatment outcomes of Chinese medicine; level of knowledge and compliance with Chinese medicine treatment; report and nature of adverse events; and disclosure rate of Chinese medicine and Western medicine usage to health practitioners.

4.1.2 Justification for a Postal Survey

Before designing the survey questionnaire, it was necessary to decide the mode of survey administration. A survey can be administered either by interviewer (such as face-to-face or telephone interview) or self-completed survey questionnaire. The benefits and downsides of each of these methods of administration were assessed in relation to the study objectives.

In certain conditions (such as needing to provide answers to queries arising from the survey questions, studies of less literate respondents, or respondents with reading and writing difficulties) an interviewer-administered survey is the most suitable method for collecting data. However, an interviewer-administered survey is more time consuming for several reasons. Researchers tend to gather additional data than required (by the study objective), due to the ability of interviewers to obtain a greater volume and more complex data. Open-ended questions are commonly used in interviewer-administered questionnaires and lead to longer time and more expense required for coding responses to the questions. Furthermore, interviewer-administered questionnaires are more costly than self-administered surveys because they have extra expenses, such as interviewers' salary and training, and travel or telephone expenses for face-to-face and telephone interviews, respectively (178).

Self-completed survey can be administered via mail or online application (by email or internet surveys). Although online survey yield faster data collection, but the coverage is limited to people with internet access (179). People with low earnings and minorities are more likely could not participate in the online survey. The online survey may also incline to young, educated and high earning people (179). And particularly in the Teaching Clinic, the patients' email addresses are not recorded as part of contact details in the medical records.

In Chapter 3.3.1.2, analysis of the patients' residence (in the state of Victoria) found that the patients lived as far as 492 km and as close as 2 km from the Teaching Clinic. For patients who reside over a large geographic region, the most cost-effective mode of survey administration is a mailed survey (178, 180). Mailed survey enables data to be gathered from a larger number of respondents concurrently. Other advantages of a mailed survey compared with an interviewer-administered survey are that they are less time consuming, easy to carry out, require less manpower, remove the possibility for interviewer bias, and respondents are more honest when completing survey (especially when dealing with sensitive inquiries) (178). In addition, it is easier for respondents to continue answering a mailed questionnaire after disruption. Mailboxes are readily available in residential and commercial areas, which enable the respondents to return the completed questionnaire to researchers (181). For the reasons described above, mail survey was selected as the mode of survey administration.

4.2 Methodology

4.2.1 Introduction

As discussed in Chapter 3, information was collected on the characteristics and contact details of patients presenting with respiratory disorders to the Teaching Clinic. A survey was then developed and administered to patients who had visited the Teaching Clinic for a respiratory disorder. Details of the development of the survey questionnaire, target survey participants, data collection process, data analysis and results from the survey questionnaire are presented in this Chapter. The procedures and instruments for survey questionnaire were reviewed and approved by RMIT University's Human Research Ethics Committee before survey administration.

4.2.2 Development of Instrument

This survey was designed to obtain patient information that was incomplete or unavailable in the medical records, this included: improvement in their respiratory disorders from the Chinese medicine treatment; use of other interventions for respiratory disorders; disclosure of use of Chinese medicine to health practitioners; and knowledge and compliance with Chinese medicine treatment. Questions on adverse events from Chinese medicine were also included in the survey to assess whether there were adverse events unreported in the medical records and the reasons for non-reporting.

The questions on knowledge of Chinese medicine were designed by referring to a general CAM reference book [182]. For section on patients' compliance with Chinese medicine, because validated tool measuring the Chinese medicine compliance is unavailable, we adapted the Western medicine tool (i.e. Morisky Medication Adherence Scale) for Chinese medicine use [183]. The remaining sections of questionnaire were based on previous survey questionnaire [32, 184-186].

4.2.2.1 Content of Instrument

The survey questionnaire was designed to be completed in about 10 minutes. The questions were grouped into four sections (as shown in Table 4.1) and consisted of 41 questions: 25 closed questions (yes/no or true/false), 12 multiple-choice questions and four open-ended questions. Respondents were first asked about which respiratory disorders they have. Respondents who did not recall having had any respiratory disorders were asked to return the survey without completing it.

Table 4-1 Sections in the survey questionnaire

• Section A:	Respiratory conditions and the use of health services
• Section B:	Compliance with Chinese medicine
• Section C:	Knowledge of Chinese medicine
• Section D:	Demographic information of respondents

Questions in Section A addressed the following areas: use of medicine (including CAM treatment) for respiratory disorders, overall outcome of Chinese medicine treatment; safety of Chinese medicine treatments; and disclosure of Western medicine and Chinese medicine use to health practitioners. For the safety aspects of Chinese medicine treatment, questions asked whether respondents experienced any adverse events from the treatment received in the Teaching Clinic and the nature of the adverse event. Respondents who had adverse events were asked to rate the severity using a 10-point scale, where: 1 indicated a very mild side effect that can easily be tolerated or causing minimal discomfort; 5 indicted a moderate side effect that caused significant discomfort or was enough to interfere with daily activities; and 10 indicated a very severe adverse event that was life-threatening or required hospitalisation. Respondents were also asked if they shared information about Western medicine (or other treatment) with their Chinese medicine practitioners, and if they shared information about Chinese medicine treatment with their general practitioners, and their reasons for not doing so.

For assessing patients' compliance with Chinese medicine treatment (Section B), the term "compliance" referred to the degree to which patients followed treatment or healthcare professionals' advice [187]. This survey adapted questions from the Morisky Medication Adherence Scale used in the study by Dolce and colleagues [183], where the scale was used to assess the adherence of patients with COPD to Western medicine. The scale assessed whether respondents forgot, stopped, were careless or consumed more medicine than instructed [183]. The Morisky scale was adapted for use in this survey because it has been validated and is extensively used in studies of patients' compliance with Western medicine treatment [188].

The section on knowledge of Chinese medicine (Section C) comprised questions assessing general knowledge of Chinese medicine regulation in Australia and basic concepts of Chinese medicine, herbs and acupuncture. The available responses for each of these questions were: "true", "false" and "not sure". The option "not sure" was included to reduce the tendency of the respondents to guess correct answers. When survey respondents are unsure of an answer, they will choose the "not sure" option if it is available [189].

Section D (demographic information) of the survey questionnaire sought patients' personal information, including their gender, age, country of birth, annual household income, highest education level and employment status. Respondents were also asked if their private health insurance covered Chinese medicine.

4.4.2.2 Pilot Testing of Survey Instrument

Before administration of the survey questionnaire to study respondents, face validity testing of the questionnaire was performed. Staff and students of the Discipline of Chinese Medicine, RMIT University assisted by reviewing the survey questionnaire and giving feedback on its clarity, content and format. The questionnaire was revised by taking this feedback into account. To determine the reliability of the survey questionnaire, the revised version was administered to 10 staff and students at a two week interval [(190)]. The re-testing was completed by the same 10 staff and students who completed the first testing. Although there was no time limit for completing the survey, most completed the questionnaire within 10 minutes. The final version of the revised survey questionnaire (Appendix H) was approved by the Human Research Ethics Committee and administered to study respondents.

4.2.3 Survey Participants

Potential survey respondents were adult patients (aged 18 years and above) who visited the Teaching Clinic for any respiratory conditions during the period 1 January 2010 to 31 December 2011. The inclusion and exclusion criteria of survey respondents are as shown in Figure 4-1. The target respondents for this study were patients with respiratory conditions as their primary or secondary complaint. The respiratory disorders included: allergic rhinitis, asthma, bronchitis, common cold, cough, pneumonia, pulmonary fibrosis, respiratory syndrome, rhinitis, shortness of breath, sinus problems and sleep apnoea.

Patients who visited the Teaching Clinic other than for respiratory disorders, or those aged less than 18 years were excluded from this mail survey. Of 319 patients identified with respiratory disorders, 20 were ineligible and were excluded from the study: 18 were aged less than 18 years old and two did not have complete address registered in the medical records. The final sample size for the survey questionnaire was 299 respondents.

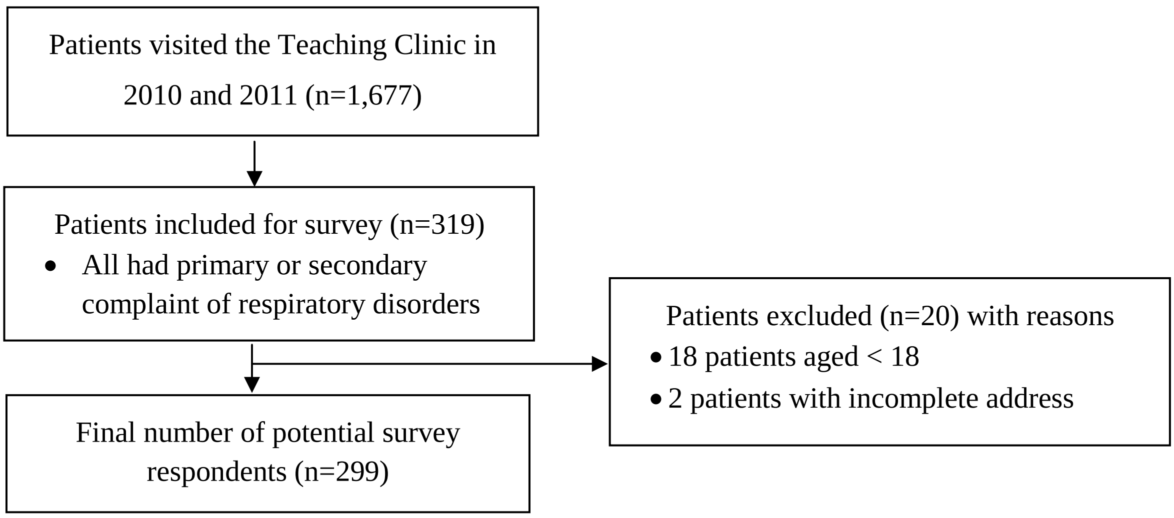

Figure 4-1 Inclusion and exclusion of survey participants

4.2.4 Data Collection and Management

The survey questionnaire, plain language statement and postage-paid envelope were anonymously mailed to all participants on 15 November 2012. Respondents were asked to use the postage-paid envelope to return the completed survey by 1 December 2012. The second mailing of the survey was a reminder to complete the survey was sent about two weeks later (on 30 November 2012) and extended the deadline for survey submission by two weeks (i.e., 12 December 2012).

The plain language statement explained the purpose of the survey and measures taken in this study to assure patients' confidentiality. The researcher was not involved in providing any treatment in the Teaching Clinic. There was, therefore, no dependent relationship between the student researcher and the study participants. Participation in the project was completely voluntary and if a patient refused to participate, his or her contact details were removed from the potential survey participant list. The responses to the surveys were anonymous and had no effect on the patient or practitioner relationship in any way.

Up to 31 December 2012, the number of returned surveys was quite low. Of 299 mailed surveys, 45 respondents returned completed survey. The survey was posted for third time on 1 March 2013, taking into account that a large group of patients of the Teaching Clinic were students and new semester started the following week. As the reminder and third mailing of the survey questionnaire were anonymous, participants who had or had not filled in the survey could not be identified. Thus, the survey was mailed to all potential respondents, excluding patients who no longer resided at the last-known address or who had refused to participate.

4.2.5 Data Analysis

Data from the completed surveys was entered into a Microsoft Excel spreadsheet and analysed using SPSS version 21.0. To determine the reliability and reproducibility of survey questionnaire, kappa measures of agreement were calculated based on data obtained from the test-retest of the survey questionnaire.

Descriptive statistics were used to summarise the characteristics of the survey respondents. Frequencies (and percentages) were calculated for qualitative variables; while for quantitative variables (such as age, number of visit), the mean *(M)* and standard deviation (*SD)* were calculated. Multiple response analysis was performed for questions which allowed more than one response from respondents, such as type of respiratory disorders and type of Chinese medicine treatment received. In Section B (compliance with Chinese medicine treatment) and Section C (knowledge of Chinese medicine) of the survey questionnaire, the responses in each section were summed to generate an overall score. Details on score calculation of compliance and knowledge are described in Chapters 4.3.9.1 and 4.3.10.1, respectively.

Secondary analyses were conducted using chi-square test, ANOVA and *t*-test. The chi-square test for goodness of fit was applied to compare the demographic profiles of the patients in the Teaching Clinic and the survey respondents. A *p*-value of <0.05 was considered statistically significant in all analysis performed. When performing ANOVA for variables which did not conform to the assumption on homogeneity of variance, the Welch method was used to calculate the test statistics [(125)]. Whereas Fisher's exact test was used to test for associations where variables which did not meet the assumption regarding the minimum expected cell frequency (which was >25% of cells had expected cell frequencies <5) [(126)].

4.3 Results

The findings from this survey are presented in the following order:

i. reliability of survey questionnaire from test-retest administration

ii. response rate of survey administered to the study respondents

iii. demographic profile of 63 respondents

iv. frequency of visit to the Teaching Clinic by demographic factor

v. type of respiratory disorders presented to the Teaching Clinic (as reported by the respondents)

vi. Chinese medicine treatments and other treatments received by respondents for respiratory disorders

vii. overall treatment outcome of Chinese medicine on respiratory disorders

viii. disclosure use of Chinese medicine and Western medicine by respondents to health practitioners

ix. compliance of respondents with Chinese medicine

x. knowledge of respondents on several areas of Chinese medicine

xi. adverse events from Chinese medicine as reported by the survey respondents.

4.3.1 Test-retest of Survey Questionnaire

Table 4-2 presents the kappa (κ) measure of agreement for the 30 categorical questions in the survey questionnaire. The statistic assesses agreement for categorical data by taking into account chance agreement (i.e., random guessing). The value of κ ranged from −1 to +1 [191]. The statistic was used to estimate the agreement of responses given by the participants in the test and re-test of the survey. The value of κ value can be interpreted as follows: κ values above 0.75 represent excellent agreement; values between 0.4 and 0.75 represent good agreement; values between 0 and 0.4 represent marginal agreement; and κ values below 0.0 indicate poor agreement [192].

Overall, kappa values ranged from poor (−0.05) to excellent (0.9–1.0). Of the 30 questions in the survey, 10 had marginal agreement, 8 had good agreement, 2 had excellent agreement and 2 had poor agreement. The kappa statistic could not be computed for the remaining 10 questions because there was no variation in the responses. This is common in small samples where cells of a cross-tabulation may contain zeros. Instances for item which was constant was questions asking respondents if they sought any treatment from general practitioner for respiratory disorders and some questions on Chinese medicine knowledge.

Table 4-2 Test-retest reliability of the survey questionnaire

Questions (n=30)	Kappa, κ	*p*-value	Strength of agreement
Section A. Respiratory disorders and health services			
Q1. Respiratory disorders that the respondents have	0.9	<0.01	Excellent
Q2. Sought any treatment from general practitioner	[a]	-	-
Q6. Improvements in respiratory disorders from having Chinese medicine treatment	0.2	0.2	Marginal
Q7. Taking Chinese medicine treatment concurrent with Western medicine (or other medicine)	0.4	0.3	Marginal
Q8. Telling general practitioner about Chinese medicine treatment and reason for not doing so	0.6	<0.01	Good
Q9. Telling Chinese medicine practitioner about other treatment and reason for not doing so	[a]	-	-
Q10. Any side effect from Chinese medicine treatment	0.6	0.02	Good
Q11. Person who verify the side effect	[a]	-	-
Q13. Telling Chinse medicine practitioner about side effect	[a]	-	-
Section B. Compliance with Chinese medicine			
Q14. Sometimes forgot to take Chinese herbs	1.0	<0.01	Excellent
Q15. Forgot to bring along Chinese herbs when travel	0.3	0.3	Marginal
Q16. Stop taking Chinese herbs because feel better	0.3	0.03	Marginal
Q17. Taking less of Chinese herbs because feel better	0.2	0.4	Marginal
Q18. Stop taking Chinese herbs because it did not help	0.2	0.5	Marginal
Q19. Taking more of Chinese herbs because feel better	0.4	0.2	Marginal
Q20. Having problem with instructions of taking Chinese herbs	0.2	0.5	Marginal
Q21. Stop seeing Chinese medicine practitioner because feel better	0.6	0.03	Good
Q22. Stop seeing Chinese medicine practitioner because it did not help	0.4	0.1	Marginal

[a] Kappa was not computed because the item measured was constant.

Table 4-2: Test-retest reliability of the survey questionnaire (continued)

Questions (n=30)	Kappa, κ	*p*-value	Strength of agreement
Section C. Knowledge of Chinese medicine			
Q23. Chinese medicine practitioners need to be registered in Australia	−0.05	0.7	Poor
Q24. There are no regulations on advertising for Chinese medicine	0.8	<0.01	Good
Q25. Chinese medicine considers the mind and spirit of the patients	[a]	-	-
Q26. In Chinese medicine, Qi describes the energy flow in the body	[a]	-	-
Q27. Chinese herbs include plants, minerals and animal products	[a]	-	-
Q28. Chinese herbs are prescribed according to an individual's constitution	[a]	-	-
Q29. Chinese herbs may interact with some Western medicine medications	0.01	0.7	Marginal
Q30. There may be side effects from Chinese herbs	0.4	0.05	Good
Q31. Acupuncture involves inserting needles at certain points of the body	[a]	-	-
Q32. There are no allergic reactions from acupuncture treatments	−0.05	0.7	Poor
Q33. Acupuncture may release natural painkillers within the body	[a]	-	-
Q34. Acupuncture can be used for a range of conditions	0.6	<0.01	Good

[a] Kappa was not computed because the item measured was constant.

4.3.2 Response Rate of Survey Questionnaire

On the last date for survey submission, of 299 potential respondents: 50 (16.7%) surveys were returned to the researcher because they had an invalid address and were unable to be delivered; 28 (9.4%) did not recall visiting the Teaching Clinic for any respiratory disorders during the years 2010 and 2011; and one potential respondent's spouse informed the researcher that the respondent had passed away.

The denominator used to calculate response rate of the survey was 220 and excludes the ineligible respondents described above. One of the potential respondent declined participation. By 1 March 2013, 63 completed survey questionnaire had been returned to researcher, a response rate of 28.6%.

4.3.3 Demographics of Respondents

4.3.3.1 Overall Profile

The demographic characteristics of the respondents are shown in Table 4-3. Nearly four fifths of the respondents were female (n=49, 77.8%), and nearly half of the respondents were aged from 46 to 64 years. The mean age of respondents was 49.2±15.7 years. The youngest respondent was 18 years old and the oldest was 82 years old. Respondents were mainly Australian-born (n=47, 74.6%) compared with overseas-born (n=16, 25.4%).

Respondents were largely employed (n=34, 54.8%), and nearly half of the respondents (n=23, 42.6%) had an annual household income of $60,000 or above. Respondents with a tertiary education (n=39, 62.9%) constituted nearly two thirds of the total sample, followed by respondents who had completed secondary school (n=12, 19.4%) and TAFE courses (n=8, 12.9%).

In Australia, private health insurance offers limited coverage for CAM treatment, such as chiropractic, acupuncture and massage. For the present survey, respondents were asked if their health insurance covered Chinese medicine. Of 45 (71.4%) respondents with private health insurance, only small proportion (n=12, 26.7%) were covered for Chinese medicine.

Table 4-3 Demographic characteristic of survey respondents

Characteristics (n=63)		**n (%)**
Gender	Female	49 (77.8)
	Male	14 (22.2)
Total		63 (100.0)
Age range (years) *M*= 49.2±15.7, Range=18–82; Mode= 63; Median= 50	18–24	5 (8.2)
	25–44	17 (27.9)
	45–64	30 (49.2)
	≥65	9 (14.7)
Subtotal		61 (100.0)
Missing		2
Country of birth	Australia	47 (74.6)
	Overseas	16 (25.4)
Total		63 (100.0)
Annual household income, AUD$	<$20,000	13 (24.1)
	$20,000–$39,999	7 (13.0)
	$40,000–$59,999	11 (20.4)
	≥$60,000	23 (42.6)
Subtotal		54 (100.0)
Missing		9
Highest education	Primary school	3 (4.8)
	Secondary school	12 (19.4)
	TAFE	8 (12.9)
	Tertiary education	39 (62.9)
Subtotal		62 (100.0)
Missing		1
Employment status	Employed	34 (54.8)
	Unemployed	6 (9.7)
	Not in the labour force	22 (35.5)
Subtotal		62 (100.0)
Missing		1
Did respondents have private health insurance?	Yes	45 (71.4)
	No	18 (28.6)
Total		63 (100.0)
Did respondents' private health insurance cover for Chinese medicine?	Yes	12 (26.7)
	No	18 (40.0)
	Not sure	15 (33.3)
Total		45 (100.0)

Table 4-4 lists the countries of birth for the 16 overseas-born respondents. A quarter of the overseas-born respondents were born in the UK (n=4, 25.0%), followed by India (n=3, 18.8%) and Malaysia (n=2, 12.5%). Asian-born respondents (which includes India, Malaysia, China and Philippines) accounted for 7 (43.8%) of the overseas-born respondents.

Table 4-4 Country of birth for overseas-born survey respondents

Country of birth	Respondents, n (%)
United Kingdom	4 (25.0)
India	3 (18.8)
Malaysia	2 (12.5)
China	1 (6.3)
Colombia	1 (6.3)
Philippine	1 (6.3)
Turkey	1 (6.3)
Netherland	1 (6.3)
Cyprus	1 (6.3)
Africa	1 (6.3)
Total	**16 (100.0)**

4.3.3.2 Comparison with General Patients

The demographic profile of the survey respondents (n=63) was compared with that of general patients (n=1,677) from the medical records review (Chapter 3.3.1) to identify similarities or difference between these two groups.

The survey respondents were patients who visited the Teaching Clinic for respiratory disorders and responded to the mailed survey questionnaire. Overall, survey respondents were statistically significantly different to the general patients in the Teaching Clinic on gender ($\chi^2(1)=4.5$, $p=0.03$), age ($\chi^2(3)=11.3$, $p=0.01$), employment status ($\chi^2(2)=26.5$, $p<0.01$) and mean number of visits to the Teaching Clinic ($t(58)=3.4$, $p<0.01$; see Table 4-5). There was an over-representation of female respondents and respondents aged from 45 to 64 years old; and an under-representation of respondents aged less than 24 years old compared with the general patients in the Teaching Clinic. The survey respondents were similar to the general patients in the Teaching Clinic in terms of country of birth, where more than half were Australian-born ($\chi^2(1)=1.8$, $p=0.2$). There was a statistically significant difference in the mean number of visits to the Teaching Clinic between survey respondents and general patients, where survey respondents visited the Teaching Clinic more frequently than general patients ($t(58)=3.4$, $p<0.01$; see Table 4-5).

Table 4-5 Demographic comparison between survey respondents and general patients in the Teaching Clinic

Demographic profile	Survey respondents [d] n (%)	General patients [c] n (%)	*p*-value
Gender			0.03
Female	49 (77.8)	1,101 (65.7)	
Male	14 (22.2)	576 (34.3)	
Chi-square test for significant difference: $\chi^2(1)=4.5$, $p=0.03$			
Age (years)			0.01
≤24	5 (8.2)	351 (20.9)	
25–44	17 (27.9)	581 (34.7)	
45–64	30 (49.2)	545 (32.5)	
≥65	9 (14.7)	199 (11.9)	
Chi-square test for significant difference: $\chi^2(3)=11.3$, $p=0.01$			
Country of birth			0.2
Australia	47 (74.6)	1,041 (66.2)	
Overseas	16 (25.4)	532 (33.8)	
Chi-square test for significant difference : $\chi^2(1)=1.8$, $p=0.18$			
Number of visit to the Teaching Clinic			<0.01
Mean±*SD*	13.1±13.8	6.9±9.7	
One sample *t*-test for significant difference: $t(58)=3.4$, $p<0.01$; Mean difference = 6.2			
Employment			<0.01[a]
Employed	34 (54.8)	802 (50.6)	
Unemployed	6 (9.7)	35 (2.2)	
Not in the labour force	22 (35.5)	747[b] (47.2)[b]	
Chi-square test for significant difference : $\chi^2(2)=26.5$, $p<0.01$			

[a] Used Fisher's exact test to calculate the test statistics.
[b] Include patients who were students, pensioner or retiree, domestic duties.
[c] Information was calculated from 2010 to 2011, the Teaching Clinic's patients profile (n=1,677 patients) (see Chapter 3).
[d] Total respondents = 63.
Data analysis excludes missing values.

4.3.4 Number of Visits to the Teaching Clinic

Table 4-6 presents the feedback from survey respondents on the number of visits to the Teaching Clinic in the last two years. One third (n=19, 32.2%) visited the Teaching Clinic one to five times in the last two years. The mean number of visits was 13.1±13.8; while the highest number of visit reported by respondents was 80 visits in the last two years (see Table 4-6).

Table 4-6 Number of respiratory visit to the Teaching Clinic

Number of visit	Respondents, n (%)
1–5 times	19 (32.2)
6–10 times	12 (20.3)
11–15 times	17 (28.8)
≥16 times	11 (18.6)
Subtotal	**59 (100.0)**
Missing	4
M = 13.1±13.8, Range =1–80, Mode = 15, Median = 10	

Total respondents=63. Data analysis excludes missing value.

Table 4-7 shows the mean number of visits (as reported by survey respondents) to the Teaching Clinic by demographic factors. Before comparing the mean number of visits using *t*-test (gender and birthplace) and ANOVA (other variables), obvious outlier values and missing values were removed because these may considerably affect results.

Females had a statistically significantly higher mean number of visits (M=11.1±6.9) than male respondents (M=5.1±3.4) ($t(51)=-2.6$, p=0.01; see Table 4-7). However, the mean number of visits did not significantly differ in respondents from different age group ($F(3,10.03)=0.1$, p=0.93), country of birth ($t(51)=1.5$, p=0.14), employment status ($F(2,50)=0.3$, p=0.74), highest education level achieved ($F(3,48)=0.08$, p=0.97) and coverage for private health insurance ($F(3,26.6)=0.3$, p =0.79; Table 4-7).

Table 4-7 Mean number of visit by demographic factor

Demographic factor (n=63)	Mean	*SD*	*p*-value
Gender			0.01
Female	11.1	6.9	
Male	5.1	3.4	
T-test for significant difference: $t(51)=-2.6$, $p=0.01$			
Age (years)			0.93 [a]
18–24	11.3	6.5	
25–44	9.4	8.5	
46–64	9.6	4.5	
≥65	11.5	11.1	
ANOVA test for significant difference: $F(3,10.03)=0.1$, $p=0.9$ [a]			
Country of birth			0.14
Australia	10.8	7.4	
Overseas	7.7	4.8	
T-test for significant difference: $t(51)=1.5$, $p=0.1$			
Employment status			0.74
Employed	9.6	6.3	
Unemployed	12.2	9.0	
Not in the labour force	9.9	7.4	
ANOVA test for significant difference: $F(2,50)=0.3$, $p=0.7$			
Highest education			0.97
Primary school	9.0	3.6	
Secondary school	10.8	7.4	
TAFE	10.0	3.5	
Tertiary education	9.7	7.4	
ANOVA test for significant difference: $F(3,48)=0.08$, $p=0.97$			
Respondents having private health insurance			0.79 [a]
Do not have any health insurance	9.1	6.1	
Health insurance owned cover Chinese medicine	11.1	6.2	
Health insurance owned does not cover Chinese medicine	10.6	9.8	
Not sure if health insurance cover Chinese medicine	9.1	4.3	
ANOVA test for significant difference: $F(3,26.6)=0.3$, $p=0.79$			

[a] ANOVA Welch method was applied to calculate the test statistic.
Data analysis excludes missing value and outlier value.

4.3.5 Type of Respiratory Disorders

The survey found that respondents had at least one respiratory disorder up to a maximum of six concurrent respiratory disorders, thus multiple response analysis was used to calculate the frequency of respiratory disorders (Figure 4-2).

Survey had been mailed to all patients who visited the Teaching Clinic for a respiratory disorder. Patients who responded to this survey generally had chronic respiratory disorders (such as allergic rhinitis, chronic sinusitis, asthma, obstructive sleep apnoea, COPD, fibrosis scleroderma and sarcoidosis) rather than acute respiratory disorders (such as common cold and cough). The highest percentage of respondents had allergic rhinitis (58.3%), followed by similar percentages of respondents having common cold (28.3%), chronic sinusitis (25.0%) and asthma (25.0%). There were three respondents who did not answer this item (Figure 4-2).

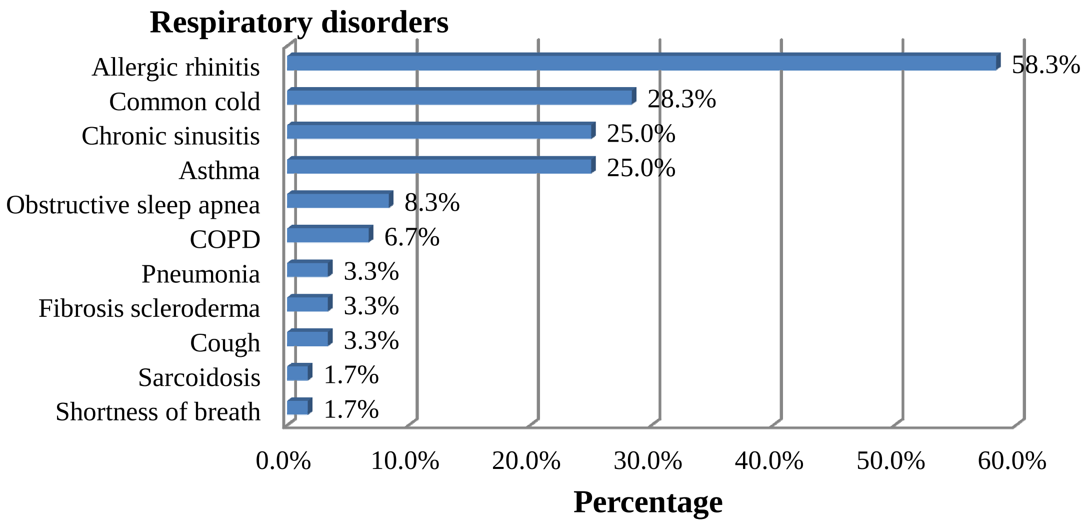

Figure 4-2 Respiratory disorders experienced by respondents

Respiratory disorders were analysed by multiple response.
Total respondents= 63. Missing (n=3). Data analysis excludes missing value.

Table 4-8 presents cross tabulations respiratory disorders by the respondents' demographic factors. Gender differences were observed, with more female respondents than male respondents for each of the respiratory disorder. In particular, respondents with COPD were all female (n=4, 100%). In terms of age, the youngest group (18 to 24 years old) and the oldest group (aged more than 65 years) constituted 25% or less of each respiratory disorder. Respondents aged 45 to 64 years, represented the largest proportion of allergic rhinitis (n=15, 45.5%), asthma (n=6, 42.9%), chronic sinusitis (n=5, 35.7%), COPD (n=2, 50.0%) and other respiratory disorders (n=8, 100%; see Table 4-8).

Similar patterns were seen in the respondents' country of birth, annual income, and private health insurance (Table 4-8). There were more respondents who were Australian-born, with annual household income more than $60,000 and no health insurance coverage for each respiratory disorder. Respondents with tertiary education and employed were largest in almost each respiratory disorder, except for obstructive sleep apnoea and COPD. Respondents with obstructive sleep apnoea, mostly did not have a tertiary education (n=3, 60%) and were either unemployed or not in the labour force (n=3, 60%; see Table 4-8).

Table 4-8 Analysis of respiratory disorders by demographic factor

Demographic factor (n=63)	Respiratory disorders, n (%)						
	Allergic rhinitis (n=35)	Common cold (n=17)	Asthma (n=15)	Chronic sinusitis (n=15)	Obstructive sleep apnoea (n=5)	COPD (n=4)	Others [a] (n=8)
Gender [b]							
Male (n=13)	6 (17.1)	4 (23.5)	2 (13.3)	1 (6.7)	2 (40.0)	0 (0)	2 (25.0)
Female (n=47)	29 (82.9)	13 (76.5)	13 (86.7)	14 (93.3)	3 (60.0)	4 (100.0)	6 (75.0)
Age (years) [c]							
18–24 (n=5)	1 (3.0)	3 (17.6)	1 (7.1)	2 (14.3)	0 (0)	1 (25.0)	0 (0)
25–44 (n=17)	11 (33.3)	7 (41.2)	5 (35.7)	4 (28.6)	0 (0)	1 (25.0)	0 (0)
45–64 (n=27)	15 (45.5)	6 (35.3)	6 (42.9)	5 (35.7)	4 (80.0)	2 (50.0)	8 (100.0)
≥65 (n=9)	6 (18.2)	1 (5.9)	2 (14.3)	3 (21.4)	1 (20.0)	0 (0)	0 (0)
Country of birth [b]							
Australia (n=45)	25 (71.4)	14 (82.4)	11 (73.3)	15 (100.0)	4 (80.0)	3 (75.0)	7 (87.5)
Overseas (n=15)	10 (28.6)	3 (17.6)	4 (26.7)	0 (0)	1 (20.0)	1 (25.0)	1 (12.5)
Highest education [d]							
<Tertiary (n=22)	13 (37.1)	6 (35.3)	5 (35.7)	6 (40.0)	3 (60.0)	1 (33.3)	6 (75.0)
≥Tertiary (n=37)	22 (62.9)	11 (64.7)	9 (64.3)	9 (60.0)	2 (40.0)	2 (66.7)	2 (25.0)

Respiratory disorders were analysed by multiple responses. Percentage was calculated based on total respondents in each group of respiratory disorders.
[a] Include cough (n=2), pneumonia (n=2), fibrosis scleroderma (n=2), shortness of breath (n=1) and sarcoidosis (n=1).
[b] Missing (n=3), [c] missing (n=5), [d] missing (n=4). Data analysis excludes missing value.

Table 4-8 Analysis of respiratory disorders by demographic factor (continued)

Demographic factor (n=63)	Respiratory disorders, n (%)						
	Allergic rhinitis (n=35)	Common cold (n=17)	Asthma (n=15)	Chronic sinusitis (n=15)	Obstructive sleep apnoea (n=5)	COPD (n=4)	Others [a] (n=8)
Employment [d]							
Employed (n=32)	20 (58.8)	10 (58.8)	8 (53.3)	7 (50.0)	2 (40.0)	1 (25.0)	5 (62.5)
Unemployed and not in the labour force (n=27)	14 (41.2)	7 (41.2)	7 (46.7)	7 (50.0)	3 (60.0)	3 (75.0)	3 (37.5)
Annual household income [e]							
<$20,000 (n=13)	6 (20.7)	2 (11.8)	5 (41.7)	2 (18.2)	1 (25.0)	1 (33.3)	3 (42.9)
$20,000 - $59,999 (n=16)	11 (37.9)	6 (35.3)	3 (25.0)	3 (27.3)	1 (25.0)	1 (33.3)	1 (14.3)
>$60,000 (n=22)	12 (41.4)	9 (52.9)	4 (33.3)	6 (54.5)	2 (50.0)	1 (33.3)	3 (42.9)
Private health insurance [b]							
Not insured or not covered for Chinese medicine (n=48)	27 (77.1)	14 (82.4)	12 (80.0)	13 (86.7)	5 (100.0)	3 (75.0)	6 (75.0)
Insured for Chinese medicine (n=12)	8 (22.9)	3 (17.6)	3 (20.0)	2 (13.3)	0 (0)	1 (25.0)	2 (25.0)

Respiratory disorders were analysed by multiple responses. Percentage was calculated based on total respondents in each group of respiratory disorders.
[a] Include cough (n=2), pneumonia (n=2), fibrosis scleroderma (n=2), shortness of breath (n=1) and sarcoidosis (n=1).
[b] Missing (n=3), [c] missing (n=5), [d] missing (n=4), [e] missing (n=12). Data analysis excludes missing value.

4.3.6 Treatments Received by the Respondents

4.3.6.1 Chinese Medicine Treatment for Respiratory Disorders

Of 63 respondents, two respondents did not indicate the type of Chinese medicine that they received; the remaining 61 respondents had one or more types of treatment. Because respondents may have had more than one type of treatment during their visits to the Teaching Clinic, types of Chinese medicine were analysed by multiple response. Respondents largely had acupuncture treatment (n=59, 96.7%), followed by Chinese herbs (n=52, 85.2%), cupping (n=16, 26.2%) and massage (n=5, 8.2%). Generally, the pattern of Chinese medicine received by the respondents was similar to that of the data obtained from the medical records review (Chapter 3.3.7). The Chinese medicine treatments from both sources were (in descending order) acupuncture, Chinese herbs, cupping and massage.

Further analysis of the type of Chinese medicine treatment found that a combination two types was provided to most of the respondents (n=40, 65.6%), followed by combination of three and more types (n=14, 23.0%; see Table 4-9). Less than 10% of respondents received a single treatment of acupuncture (n=6, 9.8%) and Chinese herbs (n=1, 1.6%). Again, the overall patterns of single and combination Chinese medicine received by the survey respondents (Table 4-9) was similar to that seen in the medical records review (Chapter 3.3.7): combination two types of Chinese medicine was most common; and single Chinese medicine was less often provided in the Teaching Clinic.

Table 4-9 Frequency of single and combination of Chinese medicine for respiratory disorders

Types of treatment	Respondents, n (%)
Single treatment	
Acupuncture	6 (9.8)
Chinese herbs	1 (1.6)
Subtotal	7 (11.5)
2 type of Chinese medicine	
Acupuncture + Chinese herbs	37 (60.7)
Acupuncture + Cupping	2 (3.3)
Chinese herbs + Massage	1 (1.6)
Subtotal	40 (65.6)
≥3 type of Chinese medicine	
Acupuncture + Chinese herbs + Cupping	10 (16.4)
Acupuncture + Chinese herbs + Massage	1 (1.6)
Acupuncture + Chinese herbs + Cupping + Massage	3 (4.9)
Subtotal	14 (23.0)
Total	**61 (100.0)**
Missing	2

Total respondents=63. Data analysis excludes missing value.

4.3.6.2 Other Treatment for Respiratory Disorders

Section A of the survey questionnaire asked about respiratory disorders and health services usage. The section specifically asked whether respondents had sought treatment from general practitioners or medical specialist, and whether they had concurrent Chinese medicine and Western medicine (or other medicine) treatment for respiratory disorders in the past two years. The majority of respondents (n=38, 64.4%) visited general practitioners or medical specialists for respiratory disorders. More than half of the respondents (n=39, 61.9%) did not concurrently use Chinese medicine and Western medicine (or other treatment).

Respondents were also asked to list their current intake of medication (including CAM) for their respiratory disorders (Table 4-10). Because respondents may have used more than one medication or treatment, the responses to the inquiry were analysed by multiple response. Of 63 respondents, 41 provided information on their current medication intake, while the remaining 22 did not have any treatment at the time of survey (Table 4-10). Respondents were largely using Western medicine (n=36, 87.8%) for respiratory disorders. These Western medicines included: bronchodilators, corticosteroids, mast cell stabilisers and antibiotics, and were taken in the form of tablets, inhalers and sprays. Other than Western medicine, six respondents (14.6%) had used some form of Chinese medicine treatment, supplement or other CAM treatment for respiratory disorders. (Table 4-10).

Table 4-10 Current treatment for respiratory disorders

Current respiratory disorders treatment	Respondents, n(%)
Western medicine [a]	36 (87.8)
Supplement	
Garlic	5 (12.2)
Horseradish	3 (7.3)
Vitamin C	2 (4.9)
Antioxidant	1 (2.4)
Respondents had either one supplement	6 (14.6)
Other CAM	
Herbs [b]	4 (9.8)
Chiropractic	1 (2.4)
Myotherapy	1 (2.4)
Homeopathy	1 (2.4)
Respondents had either one other CAM treatment	6 (14.6)
Chinese medicine	
Chinese herbs	4 (9.8)
Acupuncture	1 (2.4)
Qi Gong breathing exercise	1 (2.4)
Respondents had either one Chinese medicine	6 (14.6)
Respondents use either Western medicine, supplement, other CAM or Chinese medicine	29 (70.7)
Respondents use any of Western medicine, supplement, other CAM or Chinese medicine together	12 (29.3)
Respondents did not have any treatment at the time of survey	22
Total respondents	63

[a] Western medicine treatments include tablet, inhaler and spray form of antihistamine, bronchodilator, corticosteroid, antibiotic, decongestant.
[b] Respondents did not specify the types of herbs taken.
Feedback on usage of current respiratory treatments were analysed by multiple response. Data analyses exclude respondents who did not have any other treatment.

4.3.7 Overall Treatment Outcome of Chinese Medicine on Respiratory Disorders

4.3.7.1 Pattern of Overall Treatment Outcome

Of 63 survey respondents, 59 gave feedback on overall outcomes of Chinese medicine treatment on their respiratory disorders (Figure 4-3). Respondents largely reported a positive outcome (n=50, 84.9%) from their Chinese medicine treatment. These outcomes included: clinical improvement or cure; and improvement of their symptoms or general wellbeing. Following Chinese medicine treatment, nearly half of the respondents had symptom improvement (n=28, 47.5%). Some respondents (n=4, 6.8%) could not remember the outcome of Chinese medicine. This might due to the long period of time had elapsed since their last Chinese medicine visit for respiratory disorders. One respondent reported that his or her respiratory disorder symptoms worsened with Chinese medicine treatment (n=1, 1.7%; Figure 4-2).

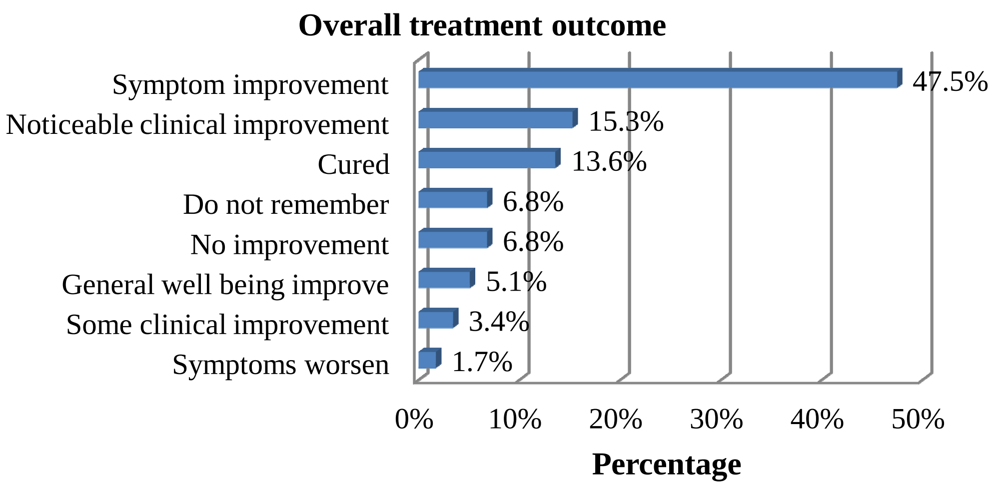

Figure 4-3 Overall treatment outcome of Chinese medicine on respiratory disorders

Total respondents= 63. Missing (n=4). Data analysis excludes missing value.

4.3.7.2 Cross-tabulation Analyses on Overall Treatment Outcome

The overall treatment outcomes from Chinese medicine were then cross-tabulated with respiratory disorders (Table 4-11). The response option for overall treatment outcome included: cured; noticeable clinical improvement; some clinical improvement; symptom improved; general well being improved; no improvement; symptom worsened; and respondents could not remember. These responses were adapted from a CAM national survey that also assessed respondents' CAM treatment outcome [31]. Multiple response analysis was used because some respondents had more than one respiratory disorder.

Across the respiratory disorders, respondents generally acknowledged symptom improvement in their allergic rhinitis (n=14, 41.2%), common cold (n=7, 43.8%), asthma (n=6, 40.0%), chronic sinusitis (n=7, 50.0%), COPD (n=3, 75.0%) and other respiratory disorders (n=9, 69.2%; Table 4-11). The second overall effects of Chinese medicine treatment were noticeable clinical improvements in allergic rhinitis (n=9, 26.5%), asthma (n=3, 20.0%), chronic sinusitis (n=2, 14.3%) and common cold (n=2, 12.5%). Symptoms were reported to have worsened only in one (2.9%) respondent with allergic rhinitis. Less than 10% of respondents with chronic respiratory disorders (allergic rhinitis, asthma, chronic sinusitis, other respiratory disorders) reported that their conditions were cured, with more patients with COPD (n=1, 25.0%) reported as cured. For acute respiratory disorders, Chinese medicine had cured about one in three of the respondents with common cold (n=5, 31.2%). A small proportion of respondents with chronic sinusitis (n=2, 14.3%), asthma (n=2, 13.3%), common cold (n=2, 12.5%), allergic rhinitis (n=3, 8.8%) and other respiratory disorders (n=1, 7.7%) could not recall the outcome of their Chinese medicine treatment (Table 4-11).

Table 4-11 Overall treatment outcome of Chinese medicine by respiratory disorders

Overall treatment outcome of Chinese medicine (n=63)	Respiratory disorders, n (%)[c]					
	Allergic rhinitis (n=34)	Common cold (n=16)	Asthma (n=15)	Chronic sinusitis (n=14)	COPD (n=4)	Others [a] (n=13)
Cured (n=7)	2 (5.9)	5 (31.2)	1 (6.7)	1 (7.1)	1 (25.0)	1 (7.7)
Noticeable clinical improvement (n=9)	9 (26.5)	2 (12.5)	3 (20.0)	2 (14.3)	0 (0)	0 (0)
Some clinical improvement (n=2)	2 (5.9)	0 (0)	1 (6.7)	1 (7.1)	0 (0)	0 (0)
Symptom improvement (n=28)	14 (41.2)	7 (43.8)	6 (40.0)	7 (50.0)	3 (75.0)	9 (69.2)
General wellbeing improved (n=3)	0 (0)	0 (0)	2 (13.3)	0 (0)	0 (0)	1 (7.7)
No improvement (n=4) [b]	3 (8.8)	0 (0)	0 (0)	1 (7.1)	0 (0)	1 (7.7)
Symptom worsened (n=1)	1 (2.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Could not remember (n=4)	3 (8.8)	2 (12.5)	2 (13.3)	2 (14.3)	0 (0)	1 (7.7)

Respiratory disorders were analysed by multiple response. Percentage was calculated based on total respondents in each group of respiratory disorder.
[a] Include cough (n=2), pneumonia (n=2), fibrosis scleroderma (n=2), shortness of breath (n=1), sarcoidosis (n=1) and obstructive sleep apnoea (n=5).
[b] No improvement in respiratory disorders, but improvement in general wellbeing were noticed by the respondents.
[c] Data analysis excludes missing value (n=5).

In assessing the overall treatment outcome of Chinese medicine on respiratory disorders, there were eight responses for respondents to choose from. For the purpose of cross-tabulating overall treatment outcomes with respondents' demographic information and behaviour (Table 4-13), the eight responses were grouped into the two categories shown in Table 4-12.

Table 4-12 Category of treatment outcome from Chinese medicine on respiratory disorders

Treatment outcome of Chinese medicine	Included responses in each category
Improvement in respiratory disorders or general well being	• Cured (as advised by health practitioner) • Some or noticeable clinical improvement (as advised by health practitioner) • Symptom improved (as perceived by respondents) • No improvement in respiratory disorders, but improvement in general well being
No improvement, symptom worsen or respondents cannot recall	• No improvement in respiratory disorders • Symptom worsened • Respondents could not recall

Table 4-13 reports the chi-square analysis of overall treatment outcome of Chinese medicine with the respondents' demographic and behaviour characteristics. Amongst respondents' demographic characteristics and behaviour, statistically significant associations were observed between number of visits to the Teaching Clinic and overall treatment outcome ($\chi^2(1)=5.3$, $p=0.02$). Respondents who frequently attend the Teaching Clinic were more likely to report improvement in their respiratory disorders. Other factors, such as age, gender, country of birth and annual household income were not associated with the overall outcome of Chinese medicine treatment (Table 4-13).

Table 4-13 Overall treatment outcome of Chinese medicine by demographic characteristic and behaviour

Demographic and behaviour of respondents (n=63)		Overall treatment outcome, n (%)		Chi-square (df, *p*-value)
		Improvement (n=50) [e]	No improvement (n=9) [f]	
Gender [a]	Male (n=13)	10 (20.0)	3 (33.3)	0.2 (1, 0.7)
	Female (n=46)	40 (80.0)	6 (66.7)	
Age (years) [b]	18–34 (n=16)	13 (27.1)	3 (33.3)	5.6 (2, 0.1) [h]
	35–54 (n=16)	11 (22.9)	5 (55.6)	
	≥55 (n=25)	24 (50.0)	1 (11.1)	
Country of birth [a]	Australia (n=43)	36 (72.0)	7 (77.8)	0.0 (1, 1.0)
	Overseas (n=16)	14 (28.0)	2 (22.2)	
Annual household income [c]	<$60,000 (n=28)	26 (60.5)	2 (25.0)	3.4 (1, 0.1) [h]
	≥$60,000 (n=23)	17 (39.5)	6 (75.0)	
Private health insurance [a]	Not insured (n=47) [g]	39 (78.0)	8 (88.9)	0.1 (1,0.8)
	Insured for Chinese medicine (n=12)	11 (22.0)	1 (11.1)	
Number of visit to the Teaching Clinic [d]	≤3 visits (n=8)	4 (8.5)	4 (44.4)	5.3 (1, 0.02)
	>4 visits (n=48)	43 (91.5)	5 (55.6)	
Disclose use of Chinese medicine to general practitioner [a]	Yes (n=37)	31 (62.0)	6 (66.7)	0.0 (1, 1.0)
	No (n=22)	19 (38.0)	3 (33.3)	
Disclose use of Western medicine to Chinese medicine practitioner [b]	Yes (n=51)	42 (87.5)	9 (100.0)	0.3 (1, 0.6)
	No (n=6)	6 (12.5)	0 (0)	

[a] Missing (n=4), [b] missing (n=6), [c] missing (n=12). [d] missing (n=7). Analysis excludes missing value.
[e] Respondents reported had cured, clinical improvement, symptom improvement in their respiratory disorders or had improvement in general wellbeing.
[f] Respondents reported no improvement in their respiratory disorders, their symptom worsen or they could not recall the treatment outcome.
[g] Respondents either did not have private health insurance or the insurance did not covered for Chinese medicine.
[h] Used Fisher's exact test to calculate the test statistic as it did not conform the assumptions of chi-square.

4.3.8 Disclosure of Use of Chinese Medicine and Other Treatment

Survey respondents were asked if they disclosed either their usage of Chinese medicine to general practitioners (Table 4-14) or their usage of Western medicine to Chinese medicine practitioners (Table 4-15), and the reasons for non-disclosure.

More than half of the respondents (n=39, 62.9%) informed their general practitioners about their Chinese medicine treatment (Table 4-14). Reasons for non-disclosure of Chinese medicine usage were analysed by multiple response because respondents were able to choose more than one reason. The most common reasons for not sharing the information were: lack of time during the consultation (n=5, 21.7%); considered general practitioner no need to know (n=5, 21.7%); and general practitioner visits were not for a respiratory disorder (n=4, 17.4%). The least common reasons for non-disclosure were: thought the general practitioner was uninterested (n=1, 4.3%); forgot to mention (n=1, 4.3%); and Chinese medicine treatment was not for a respiratory disorder (n=1, 4.3%) (Table 4-14).

Compared with the proportion of respondents disclosing their Chinese medicine use to general practitioners (Table 4-14), respondents were more willing to inform Chinese medicine practitioners about their use of other treatments (n=54, 88.5%; Table 4-15). Of seven non-disclosure respondents, two (3.3%) did not give their reasons for non-disclosure. Interestingly, none of the non-disclosing respondents said that time constraint was a reason for not sharing the information. The most common reasons for non-disclosure were that respondents did not have any other treatment (n=3, 60.0%), followed by equal proportion who deemed it unnecessary for Chinese medicine practitioners to know (n=1, 20.0%) and Chinese medicine practitioners did not ask them about it (n=1, 20.0%; Table 4-15).

Table 4-14 Disclosure of Chinese medicine use for respiratory disorders to general practitioners

Disclosure use of Chinese medicine	Respondents, n (%)
Do respondents tell general practitioner about Chinese medicine use for respiratory disorders? (n=63) [a]	
Yes	39 (62.9)
No	23 (37.1)
Total	**62 (100.0)**
Reasons for non-disclosure [b] (n=23)	
Time constraint during the consultation	5 (21.7)
Unfavourable perception on general practitioners	
Thought that general practitioners does not need to know	5 (21.7)
General practitioners may asked to stop Chinese medicine	2 (8.7)
Most general practitioners not interested to know	1 (4.3)
General practitioner did not raise/discuss the matter	
General practitioner did not ask	3 (13.0)
Did not think of informing general practitioners	2 (8.7)
Respondents forgot to mention	1 (4.3)
Treatment not for respiratory disorders	
Had not been to general practitioners for respiratory disorders	4 (17.4)
Had Chinese medicine not for respiratory disorders	1 (4.3)

[a] Missing (n=1). Data analysis excludes missing value.
[b] Reasons on non-disclosure use were analysed by multiple response.

Table 4-15 Disclosure of other treatment for respiratory disorders to Chinese medicine practitioners

Disclosure use of other treatment	Respondents, n (%)
Do respondents tell Chinese medicine practitioners about other treatment for respiratory disorders? (n=63) [a]	
Yes	54 (88.5)
No	7 (11.5)
Total	**61 (100.0)**
Reasons for non-disclosure (n=7) [b]	
Respondents did not have any other treatment	3 (60.0)
Chinese medicine practitioners does not need to know	1 (20.0)
Chinese medicine practitioners did not ask	1 (20.0)
Total	**5 (100.0)**

[a] Missing (n=2). Data analysis excludes missing value.
[b] Analysis excludes 2 respondents who did not specified the reasons for non-disclosure.

4.3.9 Compliance with Chinese Medicine Treatment

4.3.9.1 Pattern of Compliance

Section B of the survey questionnaire included nine questions that assessed the respondents' compliance with Chinese medicine. Responses to the compliance questions were scored as follows: "Yes" was scored as 0 and "No" was scored as 1. The option "not applicable" was made available to respondents who only had acupuncture treatment. A cumulative compliance score was calculated by summing the scores for each of the questions. These conventions on score calculation were adapted from a study carried out by Dolce and colleagues where compliance for patients on COPD medication were assessed [183]. The percentage of compliance for each respondent was calculated by first dividing cumulative score by denominator, then multiple by 100%. The denominator was obtained by subtracting the number of "not applicable" and missing responses from the total number of compliance questions (i.e., nine questions).

$$\text{Percentage of compliance} = \frac{\text{Cumulative score}}{\text{9-(response of “not applicable and missing response)}} \text{ x } 100\%$$

The percentage of compliance was clustered into three categories, where: 0% to 50% represented a low level of compliance; 51% to 80% was moderately compliant; and 81% to 100% was highly compliant. The percentage of Chinese medicine compliance for respondents ranged from 0% to 100%, with mean value of 73.2±21.2% which falls in the category moderately compliant (Figure 4-4). More than half of the respondents had Chinese medicine compliance of at least 70% (n=35, 57.3%). About one third of respondents had high compliance with Chinese medicine (n=22, 36.0%), and moderate compliance with Chinese medicine was observed in nearly half of the respondents (n=27, 44.3%). A lower proportion of respondents (n=12, 19.7%) had low compliance with Chinese medicine, which means they faced more difficulties in consistently following Chinese medicine, compared with highly compliant respondents (Figure 4-4).

Descriptive statistics on compliance questions were calculated to examine which area of treatment compliance need to be addressed most in Chinese medicine consultations (Table 4-16). The major reason for omitting intake of Chinese herbs was forgetfulness (n=32, 52.5%). Secondly, two in five respondents (n=26, 42.6%) discontinued taking Chinese herbs when their condition improved. On the whole, a higher percentage of respondents consumed their Chinese herbs as instructed than those who did not. This includes respondents who did not: over consume (n=53, 86.9%); under consume (n=47, 77.0%); forgot to take their Chinese herbs when travelling (n=33, 54.1%); and stopped taking their Chinese herbs either because of feeling better (n=30, 49.2%) or because Chinese herbs did not help them (n=40, 65.6%). Of 63 respondents, 1.6% admitted having difficulties in following instructions for taking Chinese herbs. Interestingly, a higher percentage of respondents continued visiting Chinese medicine practitioners although the Chinese medicine did not help them (81.7%) than respondents who stopped visiting Chinese medicine practitioners due to feeling better (50.0%; Table 4-16).

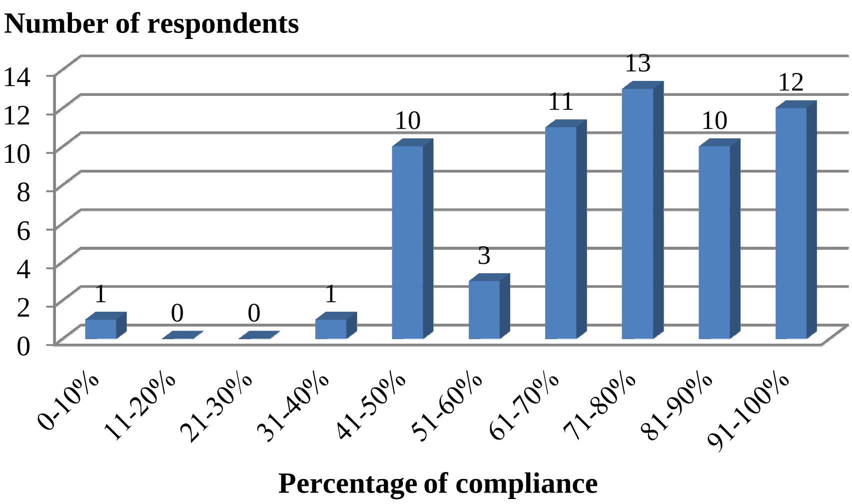

Figure 4-4 Respondents' compliance with Chinese medicine

Mean=73.2±21.2%, median=77.8%, mode=100%.
Total respondents= 63. Missing (n=2). Data analysis excludes missing value.

Table 4-16 Responses on compliance in following Chinese medicine

Questions	Yes, n (%)	No, n (%)	N/A, n (%)
Q14. Sometimes forgot to take Chinese herbs [a]	32 (52.5)	25 (41.0)	4 (6.6)
Q15. Forgot to bring along Chinese herbs when travel [a]	7 (11.5)	33 (54.1)	21 (34.4)
Q16. Stop taking Chinese herbs because feel better [a]	26 (42.6)	30 (49.2)	5 (8.2)
Q17. Taking less of Chinese herbs because feel better [a]	10 (16.4)	47 (77.0)	4 (6.6)
Q18. Stop taking Chinese herbs because it did not help [a]	20 (16.4)	40 (65.6)	11 (18.0)
Q19. Taking more of Chinese herbs because feel better [a]	3 (4.9)	53 (86.9)	5 (8.2)
Q20. Having problem with instructions of taking Chinese herbs [a]	1 (1.6)	57 (93.4)	3 (4.9)
Q21. Stop seeing Chinese medicine practitioner because feel better [b]	30 (50.0)	25 (41.7)	5 (8.3)
Q22. Stop seeing Chinese medicine practitioner because it did not help [b]	7 (11.7)	49 (81.7)	4 (6.7)

[a] Missing (n=2), [b] missing (n=3). Total respondents= 63. Data analysis excludes missing value.
N/A = Not applicable.

4.3.9.2 Cross-tabulation Analyses of Compliance

The pattern of compliance with Chinese medicine was somewhat similar across respondents' demographic information, including: gender, country of birth, annual household and private health insurance (Table 4-17). The only statistically significant difference was age group: older respondents were more likely to comply with Chinese medicine (χ^2 (2)=12.7, p=0.04). None of the respondents aged 65 years and older had low compliance with Chinese medicine, and none of the respondents aged 18 to 24 years highly compliant with Chinese medicine (Table 4-17).

There were no statistically significant associations between compliance with Chinese medicine and: number of visits to the Teaching Clinic (χ^2(2)=3.3, p=0.2), disclosure of Chinese medicine treatment to a general practitioner (χ^2(2)=0.1, p=0.9), disclosure of other treatment to Chinese medicine practitioner (χ^2(2)=0.3, p=0.9) and overall treatment outcome of Chinese medicine (χ^2(2)=3.5, p=0.3) and knowledge on Chinese medicine (χ^2(2)=7.2, p=0.2; see Table 4-18).

Table 4-17 Compliance with Chinese medicine by demographic factor

Demographic factor (n=63)		Compliance with Chinese medicine, n (%)[e]			Chi-square (df, *p*-value)
		Low (n=8) [a]	Moderate (n=31) [b]	High (n=22) [c]	
Gender [e]	Male (n=13)	1 (12.5)	5 (16.1)	7 (31.8)	2.3 (2, 0.4) [d]
	Female (n=48)	7 (87.5)	26 (83.9)	15 (68.2)	
Age (years)[g]	18–24 (n=5)	1 (12.5)	4 (12.9)	0 (0)	12.7 (6, 0.04) [d]
	25–44 (n=16)	2 (25.0)	11 (35.5)	3 (15.0)	
	45–64 (n=29)	5 (62.5)	14 (45.1)	10 (50.0)	
	≥ 65 (n=9)	0 (0)	2 (6.5)	7 (35.0)	
Country of birth [e]	Australia (n=45)	6 (75.0)	25 (80.6)	14 (63.6)	1.9 (2, 0.4)
	Overseas (n=16)	2 (25.0)	6 (19.4)	8 (36.4)	
Education [f]	<Tertiary (n=22)	2 (25.0)	8 (25.8)	12 (57.1)	5.8 (2, 0.05)
	≥Tertiary (n=38)	6 (75.0)	23 (74.2)	9 (42.9)	
Annual household income [h]	<$60,000 (n=29)	4 (50.0)	14 (50.0)	11 (68.8)	1.6 (2, 0.5) [d]
	≥$60,000 (n=23)	4 (50.0)	14 (50.0)	5 (31.3)	
Private health insurance [e]	Not insured (n=49) [i]	5 (62.5)	26 (83.9)	18 (81.8)	1.9 (2, 0.5) [d]
	Insured for Chinese medicine (n=12)	3 (37.5)	5 (16.1)	4 (18.2)	

[a] Respondents had low compliance (0% to 50%) to Chinese medicine.
[b] Respondents moderately compliant (51% to 80%) to Chinese medicine.
[c] Respondents highly compliant (81% to 100%) to Chinese medicine.
[d] Used Fisher's exact test to calculate the test statistics.
[e] Missing (n=2), [f] missing (n=3), [g] missing (n=4), [h] missing(n=11) Data analysis excludes missing value.
[i] Respondents either did not have private health insurance or the insurance did not covered for Chinese medicine.

Table 4-18 Compliance with Chinese medicine by behaviour

Behaviour of respondents (n=63)		Compliance with Chinese medicine, n (%)			Chi-square (df, *p*-value)
		Low (n=8)[a]	Moderate (n=31)[b]	High (n=22)[c]	
Number of visit to the Teaching Clinic [e]	≤3 visits (n=9)	3 (37.5)	4 (12.9)	2 (11.1)	3.3 (2, 0.2) [d]
	≥4 visits (n=48)	5 (62.5)	27 (87.1)	16 (88.9)	
Disclosure use of Chinese medicine to general practitioner [f]	Yes (n=37)	3 (37.5)	11 (36.7)	9 (40.9)	0.1 (2, 0.9) [d]
	No (n=23)	5 (62.5)	19 (63.3)	13 (59.1)	
Disclosure use of other treatment to Chinese medicine practitioner [f]	Yes (n=53)	1 (12.5)	3 (9.7)	3 (14.3)	0.3 (2, 0.9) [d]
	No (n=7)	7 (87.5)	28 (90.3)	18 (85.7)	
Overall treatment outcome of Chinese medicine [e]	Improvement (n=48) [h]	6 (85.7)	22 (75.9)	20 (95.2)	3.5 (2, 0.3) [d]
	No improvement (n=9) [i]	1 (14.3)	7 (24.1)	1 (4.8)	

[a] Respondents had low compliance (0% to 50%) to Chinese medicine.
[b] Respondents moderately comply (51% to 80%) to Chinese medicine.
[c] Respondents highly comply (81% to 100%) to Chinese medicine.
[d] Used Fisher's exact test to calculate the test statistics.
[e] Missing (n=6), [f] missing (n=3), [g] missing (n=2). Data analysis excludes missing value.
[h] Respondents reported had cured, clinical improvement, symptom improvement in their respiratory disorders or had improvement in general wellbeing.
[i] Respondents reported no improvement in their respiratory disorders, their symptom worsen or they could not recall the treatment outcome.

4.3.10 Knowledge of Chinese Medicine

4.3.10.1 Pattern of Knowledge Score

Table 4-19 shows the distribution of respondents' responses to each knowledge question. Generally, over three quarters of the respondents correctly answered half of the questions, except for questions on: regulating Chinese medicine practitioners (n=45, 71.4%) and Chinese medicine advertisements (n=15, 23.8%); description of Chinese herbs (n=34, 54.0%); possible interaction of Chinese herbs with Western medicine (n=43, 68.3%); and side effects from Chinese herbs (n=34, 54.0%) and acupuncture (n=14, 22.2%). By summing respondents who gave a wrong answer or were "not sure", most respondents: did not believe that allergic reactions may arise from acupuncture treatment (n=49, 77.8%) and were unaware of the regulation on Chinese medicine advertisement (n=48, 76.2%) (Table 4-19).

Table 4-19 Responses on knowledge questions

Questions	True, n (%)	False, n (%)	Not sure, n (%)
Q23. Chinese medicine practitioners need to be registered in Australia.	45 (71.4)	3 (4.8)	15 (23.8)
Q24. There are no regulations on advertising for Chinese medicine.	10 (15.9)	15 (23.8)	38 (60.3)
Q25. Chinese medicine considers the mind and spirit of the patients. [a]	55 (88.7)	3 (4.8)	4 (6.5)
Q26. In Chinese medicine, *Qi* describes the energy flow in the body. [a]	51 (82.3)	1 (1.6)	10 (16.1)
Q27. Chinese herbs include plants, minerals and animal products.	34 (54.0)	11 (17.5)	18 (28.6)
Q28. Chinese herbs are prescribed according to an individual's constitution.	53 (84.1)	0 (0)	10 (15.9)
Q29. Chinese herbs may interact with some western medicine medications.	43 (68.3)	2 (3.2)	18 (28.6)
Q30. There may be side effects from Chinese herbs.	34 (54.0)	6 (9.5)	23 (36.5)
Q31. Acupuncture involves inserting needles at certain points of the body. [a]	61 (98.4)	0 (0)	1 (1.6)
Q32. There are no allergic reactions from acupuncture treatments.	27 (42.9)	14 (22.2)	22 (34.9)
Q33. Acupuncture may release natural painkillers within the body.	52 (82.5)	1 (1.6)	10 (15.9)
Q34. Acupuncture can be used for a range of conditions such as obesity, back pain, insomnia, or headache.	58 (92.1)	0 (0)	5 (7.9)

[a] Missing=1. Total respondents=63. Data analysis excludes missing value.

Each correct response was given 1 point, and each incorrect or "not sure" response was given 0. The sum of correct responses produced a cumulative knowledge score [188, 193]. These scores ranged from 2 to 12 (Figure 4-5).

To further analyse knowledge of Chinese medicine, the cumulative knowledge score on Chinese medicine was collapsed into three levels where: the lowest cumulative scores from 2 to 5 were considered poor knowledge; cumulative scores of 6 to 9 considered having moderate knowledge; and highest cumulative scores of 10 to 12 considered good knowledge. The mean number of correct responses was 8.2±2.2. More than one third of the respondents (34.9%) had cumulative score of 10 to 12, which indicated good knowledge of Chinese medicine. Of 63 respondents, 9.5% had poor knowledge of Chinese medicine (Figure 4-5).

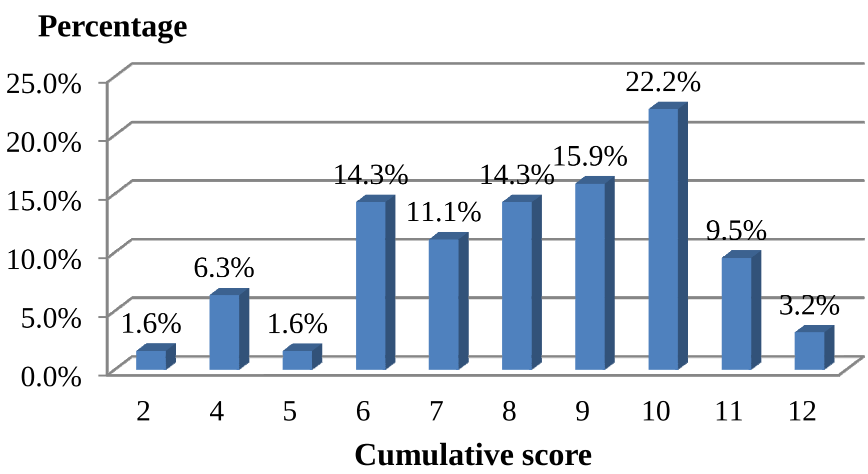

Figure 4-5 Cumulative score on knowledge in Chinese medicine

Mean= 8.2±2.2, median=9.0, mode=10.0.
Total respondents=63

The 12 questions regarding knowledge of Chinese medicine were grouped into four sections: 1) general knowledge of Chinese medicine regulation; 2) knowledge of basic concepts of Chinese medicine; 3) knowledge of Chinese herbs; and 4) knowledge of acupuncture. Table 4-20 presents a descriptive analysis of the cumulative knowledge scores by section. The highest percentage of respondents (n=44, 69.8%) scored full marks on section about basic concepts of Chinese medicine, while less than 35% obtained full marks in other sections. A majority of respondents scored 3 and 4 points on the sections on knowledge of Chinese herbs (n=34, 54.0%) and acupuncture (n=50, 79.4%). Interestingly, none of the respondents scored 0 on the section knowledge of acupuncture, but some scored 0 in other sections, with the section on Chinese medicine regulation (n=16, 25.4%) having the highest 0 score (Table 4-20).

Table 4-20 Score on sections of Chinese medicine knowledge

Score on sections of questionnaire	n (%)
Knowledge of Chinese medicine regulation	
Score 0	16 (25.4)
Score 1	34 (54.0)
Score 2	13 (20.6)
Mean=0.9±0.7, median=1.0, mode=1.0	
Basic concept of Chinese medicine	
Score 0	2 (3.2)
Score 1	17 (27.0)
Score 2	44 (69.8)
Mean=1.7±0.5, median=2.0, mode=2.0	
Knowledge of Chinese herbs	
Score 0	5 (7.9)
Score 1	6 (9.5)
Score 2	18 (28.6)
Score 3	14 (22.2)
Score 4	20 (31.8)
Mean=2.6±1.3, median=3.0, mode=4.0	
Knowledge of acupuncture	
Score 0	0 (0)
Score 1	1 (1.6)
Score 2	12 (19.0)
Score 3	38 (60.4)
Score 4	12 (19.0)
Mean=2.9 ±0.7, median=3.0, mode=3.0	

Total respondents=63

4.3.10.2 Cross-tabulation Analyses of Chinese Medicine Knowledge

Table 4-21 shows the cross-tabulation analysis of cumulative knowledge scores by demographic factors. Generally, the mean cumulative scores were similar for respondents with different demographics characteristics. Statistically significant differences were found for age group ($F(3,57)=3.2$, $p=0.03$) and highest education ($t(60)=-2.1$, $p=0.04$). Respondents aged 65 years or older ($M=6.4\pm1.8$) had the lowest mean cumulative score compare to respondents of age 18 to 24 years old ($M=9.6\pm2.3$) with the highest cumulative score (F (3,57) =3.2, $p=0.03$). Respondents with primary, secondary and TAFE education ($M=7.5\pm2.1$) scored less than respondents who had tertiary education ($M=8.7\pm2.2$) ($t(60)=-2.1$, $p=0.04$; Table 4-21).

Comparison of level of knowledge (poor, moderate or good) by respondents' information was described in Table 4-22. Statistically significant differences were seen in respondents of different age groups ($x^2(4)=10.8$, $p=0.03$) and number of visits ($x^2(2)=8.5$, $p=0.03$) to the Teaching Clinic. Respondents aged 35 to 64 years were more likely to have moderate (n=21, 61.8%) and good (n=13, 61.9%) knowledge of Chinese medicine than other age groups ($x^2(4)=10.8$, $p=0.03$). In terms of respondents' behaviour, the majority of respondents who visited the Teaching Clinic four or more times had better knowledge than respondents who visits once to thrice ($x^2(2)=8.5$, $p=0.03$; Table 4-22).

Table 4-21 Cumulative knowledge score by demographic characteristics

Demographic factor (n=63)	Mean	*SD*	*p*-value
Gender			0.4
Female	8.1	2.1	
Male	8.6	2.6	
T-test for significant difference: $t(61)=0.8$, $p=0.4$			
Age (years)			0.03
18-24	9.6	2.3	
25-44	8.0	2.2	
46-64	8.6	2.1	
≥65	6.4	1.8	
Missing (n=2)			
ANOVA for significant difference: $F(3,57)=3.2$, $p=0.03$			
Country of birth			0.9
Australia	8.2	2.2	
Overseas	8.2	2.4	
T-test for significant difference: $t(61)=-0.07$, $p=0.9$			
Highest education			0.04
< Tertiary	7.5	2.1	
≥ Tertiary	8.7	2.2	
Missing (n=1)			
T-test for significant difference: $t(60)=-2.1$, $p=0.04$			
Annual household income, AUD$			0.7
< $60,000	8.5	2.1	
≥ $60,000	8.3	2.6	
Missing (n=9)			
T-test for significant difference: $t(52)=-0.4$, $p=0.7$			
Employment status			0.9
Employed	8.2	2.4	
Unemployed or not in the labour force	8.3	2.0	
Missing (n=1)			
T-test for significant difference: $t(60)=-0.1$, $p=0.9$			

Data analysis excludes missing value.

Table 4-22 Knowledge of Chinese medicine by demographic and other information

Demographic and other information (n=63)		Knowledge of Chinese medicine, n (%)[a]			Chi-square (df, *p*-value)
		Poor (n=6)	Moderate (n=35)	Good (n=22)	
Age (years) [b]	18–34 (n=16)	1 (16.7)	7 (20.6)	8 (38.1)	10.8 (4,0.03) [e]
	35–64 (n=36)	2 (33.3)	21 (61.8)	13 (61.9)	
	≥65 (n=9)	3 (50.0)	6 (17.6)	0 (0)	
Education [c]	<Tertiary (n=23)	3 (50.0)	14 (41.2)	6 (27.3)	1.6 (2, 0.5) [e]
	≥Tertiary (n=39)	3 (50.0)	20 (58.8)	16 (72.7)	
Number of visit to the Teaching Clinic [d]	≤3 visits (n=9)	3 (60.0)	4 (12.1)	2 (9.5)	8.5 (2,0.03) [e]
	≥4 visits (n=50)	2 (40.0)	29 (87.9)	19 (90.5)	
Disclosure use of Chinese medicine to general practitioner [c]	Yes (n=39)	2 (33.3)	22 (64.7)	15 (68.2)	2.6 (2, 0.3) [e]
	No (n=23)	4 (66.7)	12 (35.3)	7 (31.8)	
Disclosure use of other treatment to Chinese medicine practitioner [b]	Yes (n=54)	4 (66.7)	32 (91.4)	18 (90.0)	3.2 (2, 0.2) [e]
	No (n=7)	2 (33.3)	3 (8.6)	2 (10.0)	
Overall treatment outcome of Chinese medicine [d]	Improvement (n=50) [f]	6 (100.0)	25 (80.6)	19 (86.4)	1.5 (2,0.6) [e]
	No improvement (n=9) [g]	0 (0)	6 (19.4)	3 (13.6)	
Compliance with Chinese medicine [b]	Low (n=8)	0 (0)	6 (17.2)	2 (10.0)	7.2 (4, 0.1) [e]
	Moderate (n=31)	1 (16.7)	18 (51.4)	12 (60.0)	
	High (n=22)	5 (83.3)	11 (31.4)	6 (30.0)	

[a] Knowledge of Chinese medicine, of total score 12: Poor indicated respondents had cumulative score of 2 to 5; moderate indicated respondents had cumulative score of 6 to 9; good indicated respondents scored 10 to 12.
[b] Missing (n=2), [c] missing (n=1), [d] missing (n=4). Data analysis excludes missing value.
[e] Used Fisher's exact test to calculate the test statistics.
[f] Respondents reported had cured, clinical improvement, symptom improvement in their respiratory disorders or had improvement in general wellbeing.
[g] Respondents reported no improvement in their respiratory disorders, their symptom worsen or they could not recall the treatment outcome.

4.3.11 Reported Adverse Event

Adverse events are defined as any unfavourable symptoms or diseases that occur following a treatment or use of therapeutic product [(51)]. Of the 63 survey respondents: 5 (7.9%) reported experiencing an adverse event from Chinese medicine treatment: 2 adverse events were reported from each of acupuncture and cupping; and the remaining adverse event was from Chinese herbs (Table 4-23). In terms of severity of the adverse events, respondents rated nearly all (n=4, 80%) adverse events as moderate (including 4 and 5 scale of severity). Severe bruising (scale of severity 7) from cupping treatment was reported by one respondent (Table 4-23). It is worth noting that, four out of five (80%) adverse events were experienced by female, Australian-born and tertiary educated respondents. Additionally these respondents had good knowledge of Chinese medicine and experienced improvement on their respiratory disorders (Table 4-23).

Table 4-23 Characteristics of respondents with adverse events

No.	Adverse event (severity [a])	Related Chinese medicine	Demographic information: Gender	Age (years)	Birth place	Highest education	Private health insurance coverage	Knowledge on Chinese medicine [b]	Compliance to Chinese medicine [c]	Treatment outcome of Chinese medicine [d]
1	Heartburn (5)	Herb	Female	-- [e]	UK	TAFE	Not insured	Good	High	Improved
2	Pain at treatment site (4)	Acupuncture	Female	29	Australia	Tertiary	Covered for Chinese medicine	Good	Moderate	No improvement
3	Headache (5)	Acupuncture	Female	34	Australia	Tertiary	Not covered for Chinese medicine	Good	Low	Improved
4	Bruising (5)	Cupping	Female	31	Australia	Tertiary	Not insured	Good	-- [e]	Improved
5	Bruising (7)	Cupping	Male	58	Australia	Tertiary	Not covered for Chinese medicine	Moderate	Moderate	Improved

[a] The severity of adverse event was rated from 1 to 10: 1 was very mild; 5 was moderate; 10 was very severe.
[b] Of cumulative score 12: Poor indicated respondents scored 2 to 5; moderate indicated respondents scored 6 to 9; good indicated respondents scored 10 to 12.
[c] Improved indicated that respiratory disorders had cured; clinical improvement, symptom improvement in their respiratory disorders or had improvement in general wellbeing. No improvement indicated that respondents had no improvement in their respiratory disorders, their symptom worsen or they could not recall the treatment outcome.
[d] Low indicated respondents had 0% to 50% complied with Chinese medicine; moderate indicated respondents had 51% to 80% complied with Chinese medicine high indicated respondents had 81% to 100% comply with Chinese medicine.
[e] Missing data.

Because survey respondents might have had other treatment or medication concurrent with Chinese medicine, adverse events experienced by respondents might have resulted from other treatment. Thus, this survey also considered the person whom verified the experienced adverse event was related to Chinese medicine (Table 4-24). Chinese medicine practitioners at the Teaching Clinic verified that 40% of the experienced adverse events were from Chinese medicine, and the respondents themselves concluded that the adverse events were the result of Chinese medicine in the remaining 60%. After experiencing an adverse event, 3 (60.0%) respondents informed their Chinese medicine practitioner about it. The remaining 2 (40.0%) respondents did not inform the Chinese medicine practitioner because they did not return for further treatment (Table 4-24). It is unclear whether the occurrence of an adverse event led to respondents discontinuing visiting the Teaching Clinic because the questionnaire did not cover that possibility.

Table 4-24 Verification and disclosure of adverse events from Chinese medicine

Verify and disclosure of adverse events (n=5)	Respondent, n(%)
Who concluded that the adverse events were related to Chinese medicine that respondents received? (n=5)	
Respondents themselves	3 (60.0)
Chinese medicine practitioners	2 (40.0)
Total	5 (100.0)
Do respondents inform usually tell their Chinese medicine practitioner about the adverse event? (n=5)	
Yes	3 (60.0)
No	2 (40.0)
Total	5 (100.0)
Reasons for non-disclosure (n=2)	
Respondents did not return to the Teaching Clinic	2 (100.0)

4.4 Discussion

4.4.1 Methodology

This section discusses developing, administrating and improving response of the survey questionnaire and the use of validated tool.

Respondents for this survey questionnaire were patients who visited the Teaching Clinic for respiratory disorders between 2010 and 2011. Before 2011, patients' personal information (such as their residential address) was recorded in the paper-based medical records (Chapter 3.2.4.1). For mailing the survey, the residential addresses of potential respondents were retrieved from the medical records. However, because the personal information was recorded manually, incomplete information went unnoticed. Of 319 patients identified with respiratory disorders, the survey questionnaire was unable to be mailed to two of them because of an incomplete address. Beginning in 2011, patients' personal data was recorded on the electronic appointment booking system which helped keep patients' registration more complete.

In developing the survey questionnaire, test-retest analysis was carried out by administering the survey to the same participants two weeks apart. The two weeks gap was chosen to reduce the remembering and learning effect on the stability of survey [(194)]. Kappa were selected as an indicator of reliability for the categorical questions [(190)]. As shown in Table 4-2, the kappa value was inconsistent (ranging from "poor agreement" to "excellent agreement"), which suggested that the survey need to be revised [(190)]. The survey was then revised by taking into account comments on language and format provided by the participants of the test-retest analysis. Closed questions were used appropriately to increase the survey reliability [(195)]. The initial and final drafts of the survey are attached as Appendix I and Appendix H, respectively.

Because non-responders can affect the precision of the questionnaire results, several systematic reviews had evaluated ways to improve response rates of mail questionnaires [(196, 197)[197]. Therefore, this project adopted approaches to promote the survey response through the design, follow-up and mailing of the questionnaire. In terms of design, the questionnaire was: revised several times to make it less lengthy [(197)]; arranged so that the less difficult questions appeared at the beginning of the questionnaire; tried to use closed questions whenever possible; and reassured respondents that their responses were anonymous [(196)]. Questionnaire was follow-up by sending a reminder [(197)] along with another copy of questionnaire; and by extending the deadline to encourage non-respondents to fill it in [(196)]. To facilitate returning the completed questionnaire, a stamped addressed return envelope was mailed with the questionnaire. The above mentioned systematic review noted that these approaches can improve the response of the questionnaire [(196)].

Ideally researchers should employ validated tool in conducting studies. Validated tool has been thoroughly examined to communicate information precisely and consistently on topic of interest [(198)] . Employing validated tools allow the researchers to conduct comparative analysis with previous studies that used the same validated tools. Area of strength and weakness in measured outcome could be defined and the strategy to improve the measured outcome could be formulated. Because this current survey gathered information on a few aspects specifically on Chinese medicine (i.e. knowledge, compliance, disclosure, treatment outcome and safety of Chinese medicine), a validated survey questionnaire covering these aspects was not readily available. Therefore, this current study designed the survey by referring to earlier studies and adapting validated tool (i.e. Morisky scale for treatment compliance).

4.4.2 Response Rate

The response rate was a concern for the present study because it affects the acceptance and generalisation of the findings [178]. Although the current study attempted to increase the response rate by: mailing a reminder and a copy of the survey; ensuring that the responses were anonymous; and providing stamped return envelope, the resulting response rate of 28.6% was quite low. The response rates for mail surveys of CAM users were inconsistent. In a systematic review on CAM use by the general public in 15 countries, mailed and non-government funded survey at sub- or national level had response rates ranging from 37% to 78% [22]. Nevertheless, a mail survey that investigated the perception of CAM users and their rapport with healthcare professionals had a response rate of 28% [199], a comparable response rate to this study. The response rate of the study was low despite the efforts to enhance the response rate, including: obtaining the institution's support for the study; designing the questionnaire to be brief; and enclosing stamp-returned envelope for respondents to return completed questionnaire [199].

The response rate itself is affected by many factors, such as mode of survey administration, content of questionnaire and duration of survey [200]. In another study of satisfaction and experience of patients in an acupuncture teaching clinic, the response rate was quite high 78% [139]. Xing and colleague applied a similar approach: a mailed survey with reminder and provided a stamped envelope for respondents to return the completed survey. Apart from well-structured questionnaire, subject of interest to respondents was emphasised for attaining high response rate [139]. The observed difference between the study of Xing and colleague with the current study was sample selection. Possibly by drawing a sample from patients visiting in the current year (rather than previous year as in the current study), it would be easier for respondents to recall the required information and selected sample may still be engaged with the Teaching Clinic and will be more likely to respond to the survey.

Following section will further discussed about the non-respondents of the current survey.

4.4.3 Non-respondents of Survey

Findings from reviewing medical records (Chapter 3) had initially identified 299 potential respondents for the survey. Unfortunately, 50 (16.7%) potential respondents of the mailed survey were returned to the researcher because they had moved houses.

This finding reflects moving house patterns in Australia from Survey of Income and Housing that was cited in report of Australian Social Trends December 2010: Moving House (201). The survey examined the pattern of moving house of Australians aged 15 years and above, and discovered that nearly half of the Australian (43%) had moved houses in the last five years (i.e., recent movers). The survey also found that a higher percentage of recent movers was associated with characteristics such as being aged between 20 and 34 years (ranged from 65% to 85%) and being a young household without children (90%) (201, p.1). Reasons for moving house in the group aged 20 to 30 years were: getting job after completing studies, moving out of parents' house, financial issues and moving in or out due to relationships (201).

Among the possible reasons for non-response to this current survey was the composition of patients attending the Teaching Clinic which were mostly between 18 to 34 years old (37.3%) and were students (28.3%; Chapter 3.3.1.1). These patients' characteristics were similar to the characteristics of recent movers from the above survey and moving house may be one of the factors contributing to the low response rate (178).

Interestingly, among the non-respondents, there were 28 potential respondents who did not recall visiting the Teaching Clinic for a respiratory disorder. Findings from the medical record review (Chapter 3) showed that the mode number of visits in the two years, 2010 and 2011 was a single visit. It is possible that these 28 non-respondents visited the Teaching Clinic only once throughout the study period or had respiratory disorders as secondary complaint, and it was thus difficult for them to recall the single visit.

4.4.4 Demographic of Respondents

The survey respondents in this study were patients who visited the Teaching Clinic for a respiratory disorder in the years 2010 and 2011. Although the survey was administered about one to two years (in 2012) after their visit, the demographic characteristics of respondents were somewhat different from the general patients in the Teaching Clinic in respect to their gender ($\chi^2(1)=4.5$, $p=0.03$), age ($\chi^2(3)=11.3$, $p=0.01$), employment status ($\chi^2(2)=26.5$, $p<0.01$) and mean number of visits ($t(58)=3.4$, $p<0.01$). The results for general patients attending the Teaching Clinic (in 2010 and 2011) were gathered from medical records review (Chapter 3). Similarities in the demographic profiles for the survey respondents and the general patients was more than half of both respondents and general patients at the Teaching Clinic were born in Australia ($\chi^2(1)=1.8$, $p=0.18$; Table 4-5).

In the literature, the chosen mode of survey administration (such as mail or interview) yielded a different demographic profile of respondents [(200)]. Compared with the general patients in the Teaching Clinic, this survey showed that among the survey respondents were an over-representation of females (survey 77.8%; general patients 65.7%; $\chi^2(1)=4.5$, $p=0.03$) and aged older than 45 years (survey 63.9%; general patients 44.4%; $\chi^2(3)=11.3$, $p=0.01$). The findings were similar to clinical trials that compared the characteristics of respondents who answered mailed questionnaire and telephone interview [(202)]. The clinical trials found that female and older patients tended to respond more to mailed questionnaires compared with telephone interviews [(202)]. The findings on respondents' characteristics are beneficial for selecting the mode of survey administration to target certain gender or age groups of potential respondents in future research.

Comparing the employment status between survey respondents and general patients in the Teaching Clinic found that a higher proportion of survey respondents than general patients were employed (survey 54.8%; general patients=50.6%) and unemployed (survey 9.7%; general patients=2.2%). There were fewer respondents (n=22, 35.5%) who were not in the labour force than the general patients (n=747, 47.2%). The category “not in the labour force” included students, pensioners, retirees, and domestic duties. Because being a student was one of the characteristics of recent movers in a survey on moving house patterns in Australia [201], it is possible that the mailed survey reached fewer students because they had moved house after completing their studies or moved out of their parents’ house.

In terms of country of birth, the proportion of Australian-born or overseas-born respondents were comparable to the general patients in the Teaching Clinic ($\chi^2(1)=1.8$, $p=0.18$; Table 4-5). This finding coincides with a recent systematic review that compared the response rate for surveys between different races. The review concluded that race did not affect the response rate of the survey, except for surveys that particularly related to the respondents’ race (such as Asian Health Survey) that had higher response rate compared to general population [200].

Previous studies on expenditure on CAM treatment found that most health insurance companies do not reimburse for CAM treatment, and that CAM users covered the expenditure themselves [39, 135]. This current survey found that: almost half of the respondents (n=23, 42.6%) had higher annual household income (i.e. $60,000 or above); more than half were tertiary educated (n=39, 62.9%); and only one-quarter of the 45 insured respondents (n=12, 26.7%) were covered for Chinese medicine. Because Chinese medicine treatment is not universally covered by Medicare insurance, the Chinese medicine user is likely to have higher socioeconomic status to cover the cost of Chinese medicine treatment. Similarly, an earlier local survey on the attitudes of Melbourne public towards Chinese medicine reported that only 20.6% of respondents had CAM covered by their health insurance plan [39]. The readiness to pay out of pocket suggested they acknowledged Chinese medicine and valued the beneficial effect of Chinese medicine more than the treatment cost [135].

In regard to other demographic characteristics, respondents had higher education level (post-secondary education), were employed, had better income and were born in Australia. These findings were similar to a previous national study of CAM consumers [30, 31, 203].

Breaking down the mean number of visits to the Teaching Clinic by demographic characteristic showed that the mean number of visits for female respondents (M=11.1± 6.9) was two-fold higher than that for male respondents (M=5.1± 3.4) ($t(51)=-2.6$, p =0.01). The findings was similar to a recent systematic review of the use of CAM by the general public and health professionals [135]. The systematic review identified a few attributes of CAM users, including that females used CAM more than males [135].

4.4.5 Disclosure of Use of Chinese Medicine, Other Treatment, Western Medicine and Adverse Events

Earlier, chapter 4.3.6.2 found that 38.1% of respondents co-use Chinese medicine and other treatments for respiratory disorders. Therefore, disclosing the use of Chinese medicine and other treatments, especially Western medicine, to medical practitioners is necessary to prevent unwanted interaction between CAM and Western medicine [(44)] and to facilitate the medical practitioner in providing healthcare to patients [(46)]. Instances of reports of preventable interactions between CAM and Western medicine involved patients who did not inform their surgeon about their intake of the herb *Ginkgo Biloba* before their surgery, resulting excessive bleeding during the procedure [(204)].

Because the above problem also applies to Chinese medicine, the disclosure of Chinese medicine usage was assessed and found that about three fifths of respondents (n=39, 62.9%) disclosed their Chinese medicine usage to their general practitioner. This findings was similar to a previous study of patients visiting medical practitioners (whom did not practice any kind of CAM) [(193)]. Approximately 67% of respondents disclosed their CAM usage to non-CAM medical practitioners [(193)]. However, a recent secondary analysis of a Hong Kong population survey found a lower disclosure rate (40.7%) of use of over-the-counter Chinese medicine with their medical practitioners. The survey interviewed Hong Kong population older than 15 years and asked about their concurrent use of Chinese medicine and Western medicine [(47)].

Interestingly, this present study found that more respondents (n=54, 88.5%) disclosed information on Western medicine use to Chinese medicine practitioners, compared with disclosing Chinese medicine use to general practitioners (n=39, 62.9%). This pattern of disclosure was also observed in the Hong Kong survey, in which 59.9% of respondents disclosed the use of Western medicine, while 40.7% disclosed the use of Chinese medicine [(47)]. Many qualitative and quantitative studies have been carried out to examine the disclosure of CAM usage to medical practitioners [46]. However, not many studies have investigated the opposite, the disclosure use of Western medicine to CAM practitioners, despite the same rationale for disclosure use of CAM also applied to disclosure use of Western medicine.

In terms of reasons for non-disclosure to medical practitioners, the present study identified two main areas: having an unfavourable perception by their medical practitioners; and medical practitioners did not initiate such discussion. These findings were consistent with both a previous systematic review on communicating CAM use with medical practitioners [46] and a recent cross-sectional survey of characteristic of CAM users on adult Queenslanders [205]. In addition, a small proportion respondents (n=5, 20.9%) in the present study reported having Western medicine or Chinese medicine for other conditions (than respiratory disorders) and this resulted in the non-disclosure use of Chinese medicine to their medical practitioner.

Besides disclosing the use of Western medicine and Chinese medicine to health practitioners, the present survey also asked if respondents informed their Chinese medicine practitioner about their adverse event. Of five respondents who experienced an adverse event, two (40%) of them did not inform their Chinese medicine practitioner about the events because they did not return to the Teaching Clinic for further treatment. It is possible that the occurrences of adverse events caused them to discontinue the Chinese medicine treatment, and further study is needed to examine this possible factor.

4.4.6 Knowledge of Chinese Medicine Practice and Treatment

Demographically, respondents with a better knowledge of Chinese medicine were tertiary-educated ($t(60)=-2.1$, $p=0.04$) and visited the Teaching Clinic more frequently ($\chi^2(2)=8.5$, $p=0.03$). These findings were consistent with a previous study by Chin and colleagues that compared the knowledge, attitudes and behaviour between patients and medical practitioners on Chinese medicine practice and treatment [(193)]. Although the study found that knowledge levels were similar for patients of different age groups, the current study showed that respondents aged 65 and older ($x^2(4)=10.8$, $p=0.03$) had lower knowledge levels than their younger counterparts.

Analysing the knowledge questions by sections showed that the: lowest portion of respondents were not aware (n=16, 25.4%) of Chinese medicine regulations; and highest portion of respondents knew the basic concepts of Chinese medicine (n=44, 69.8%). The Chinese medicine regulation questions in the current study were whether Chinese medicine practitioners are required to be registered in Australia, and whether advertisements on Chinese medicine are regulated. However, this finding was different to the findings from Chen and colleagues [(193)]. Overall, patients had better understanding of Chinese medicine regulation but lower understanding of the basic concepts of Chinese medicine compared with medical practitioners [(193)]. The difference is probably due to the study setting. The current study was carried out at a Chinese Medicine Teaching Clinic, while Chen and colleagues conducted their study in a family practice clinic. Patients in the study by Chen and colleagues were more aware of the Chinese medicine regulation as this information benefited them in choosing which Chinese medicine practitioner to seek Chinese medicine treatment [(193)].

In Australia, Chinese medicine practice is regulated by the Chinese Medicine Board to protect the public through higher standards of practice and accountability and to assure public safety

[206]. Apart from visiting the Teaching Clinic, patients may seek Chinese medicine treatment at other clinics and having knowledge of the general regulation of Chinese medicine is essential in facilitating respondents in deciding and seeking safe Chinese medicine. For example, other health care professionals (such as physiotherapist and medical doctor) could provide dry needling in their premise. However, they could not use the title “Acupuncturist” without having approved qualification to register with Chinese Medicine Board of Australia or have the acupuncture practice endorsed by their relevant boards. Therefore, it is necessary to convey information on general regulation of Chinese medicine to the patients to address these gaps in knowledge and assure safe Chinese medicine practice.

The number of patients who have chronic disorders and need long-term management has escalated, and accordingly, patient education has become a key component in health service delivery [177]. Considering that education programs can promote both knowledge [207] as well as compliance and treatment outcomes for patients [177, 208], implementing education sessions on the chronic diseases most often encountered in the Teaching Clinic would be beneficial for both patients and student practitioners. The syllabus of the education program can cover the nature and types of the diseases, how Chinese medicine helps to relieve the disease and self-management (such as diet and lifestyle) strategies that patients can apply in their daily life. Providing education sessions to patients can be considered part of students’ clinical learning, which they can still carry out after graduation. Subsequently, intervention studies can be conducted to compare the knowledge, compliance and treatment outcomes of patients at pre- and post-education session.

4.4.7 Overall Treatment Outcome from Chinese Medicine

Of 63 survey respondents, more than four fifths of respondents observed positive treatment outcomes (n=50, 84.9%) following Chinese medicine treatment, and improvements were reported more often by respondents who visited the Teaching Clinic four times or more ($\chi^2(1)=5.3$, $p=0.02$). However conclusions on the effectiveness of Chinese medicine could not be made because this survey is not a clinical trial to analyse treatment effectiveness [137]. Instead, this survey aims to examine respondents' experience of the overall effect from Chinese medicine and students practitioners' experience.

This current finding builds on the previous findings on outcomes of Chinese medicine in a university-based clinic. In a retrospective postal survey on patients in an acupuncture teaching clinic in the UK, symptom alleviation was reported by more than four fifths (88%) of respondents, and the alleviation lasted for one to six months for the majority of those respondents (44%) [139]. A 2005 prospective study of patients seeking acupuncture treatment in a teaching clinic in US assessed the treatment outcome pre-treatment and one month post-treatment. More than half of the patients (55.3%) reported at least 50% improvement in their conditions [137]. A recent prospective study by Marx and colleagues surveyed acupuncture patients of a teaching clinic in the US. Patients were asked to complete the treatment outcome questionnaire on their first and fifth visits [163]. At baseline, the patients had a lower mean score for physical health and functioning and mental health than the average US population [163].

The findings on health outcomes from Chinese medicine in these teaching clinics could not be directly compared because these studies used different data collection tools, resulting in different outcome measure. These data collection included revised version of the questionnaire used by Xing et at. [139], Measure Your Medical Outcome Profile, Patient Report Outcome Measurement Information System [163].

4.4.8 Knowledge, Compliance and Outcome of Chinese Medicine

The education program, knowledge, compliance and treatment outcomes of patients are linked to each other. The patients' treatment compliance was positively associated with their knowledge (of disease and/or management): patients with better knowledge more readily complied with their treatment [176, 177, 209]. Galletti and Sturniolo [210] as cited in Chen and colleagues [207] pointed out that patients' lack of knowledge and treatment compliance can be detected through an education program such as counselling. Additionally, through education programs, patients have better knowledge and compliance with treatment and benefited the patients themselves (particularly by improving their treatment outcome such as minimising number of emergency visits and hospitalisation) [177].

Despite the above evidence, result from the current study indicated that treatment outcomes were similar regardless of respondents' compliance with treatment ($\chi^2(2)=3.5$, $p=0.3$). On average, respondents had moderate scores for knowledge of Chinese medicine ($M=8.2\pm2.2$) and moderate compliance with Chinese medicine ($M=73.2\%\pm21.2\%$); however, the association between these two variables could not be established ($\chi^2(4)=7.2$, $p=0.1$).

The differences in study design between the current study and previous studies may have yielded different results. Previous surveys of patients' knowledge and compliance had measured the knowledge and compliance of patients when patients were still having follow-up treatment for their disorder [176, 177, 209]. Whereas, for the current survey there was long time (from one to two years) between administration of the survey and the patients' last visit to the Teaching Clinic. The design of this study may have affected the results for level of knowledge because the findings reflected the respondents' knowledge at the time of survey administration. It is possible that respondents gained more knowledge during the time after their Chinese medicine sessions.

4.4.9 Adverse Event of Chinese Medicine

Risk is inherent in every treatment or medicine, and may result in adverse events for patients [154]. For example, diclofenac, which is used to relieve pain in Western medicine has been reported to cause adverse events such as nausea, vomiting, bleeding [211].

Demographically, of the five adverse events reported by respondents, four were female. The respondents in the current study were predominately female (n=49, 77.8%) and a study on adverse events related to acupuncture treatment suggested that this may due to the fact that there were more female respondents than male respondents, rather than certain gender being more likely to experience adverse event from Chinese medicine [212].

In the current study, adverse events from Chinese medicine were assessed from two sources: medical records (Chapter 3) and a survey questionnaire (Chapter 4). These two sources examined adverse events from different points of view: student practitioners and patients. A review of the occurrence of adverse events in primary care recommended acquisition of data on adverse events from a second reporter, instead of depending on practitioners' reports [213]. This approach is necessary to enhance the reliability of records of adverse event [213]. The recommendation was demonstrated in a study comparing adverse event reports from four different sources: general practitioners, pharmacists, patients and medical records [214]. The survey found that patients reported more adverse events than general practitioners [214]. Similarly, in the current study, respondents reported higher percentage of adverse events (n=5, 7.9%) than were identified in medical records (n=153, 1.3%). Less adverse events recorded in the medical records could possibly due to potential under-reporting and non-response bias among those patients who had adverse events did not return for follow-up treatment, resulting less adverse events were informed to practitioners [32]. From practitioners' point of view, underreporting of adverse events was due to heavy work load and time constraints of the practitioner [214] or because the adverse event were undetected by practitioner [212]. Therefore, adverse events reported by patients may supplement practitioners' reports by uncovering blind spot in provided treatment [212, 214].

Furthermore, this survey offered additional information on adverse events compared to medical records. Apart from describing the nature and severity of adverse events, this survey sought further information on adverse events, namely verification of adverse events and communication of the events with their health practitioner. As not necessarily all reported adverse events were related to Chinese medicine, adverse events may relate to Western medicine usage too. Thus, it is essential to obtain verification of whether adverse events were caused by Chinese medicine or other treatment that respondents had. Of five adverse events reported by respondents, two were verified by Chinese medicine practitioners, and three respondents informed their Chinese medicine practitioners about the adverse events. It is necessary for practitioners to be informed about adverse events, so that the adverse events can be managed accordingly and precaution can be taken in subsequent treatment session.

4.5 Project Limitation and Recommendation

4.5.1 Study Design

This study had a few limitations. Firstly, the response rate of this current survey was lower than some studies with similar approaches (i.e., mail and non-government survey). In the current survey, respondents mostly had chronic respiratory disorders rather than acute conditions, compared with the medical records data that showed most respiratory disorders visits were for acute conditions. This may imply that patients with chronic disorders more readily to respond to surveys, but further studies are needed to verify this. Thus, future studies on Chinese medicine usage for respiratory disorders may consider focusing on chronic disorders instead of general respiratory disorders, or recruiting participants at a setting which is commonly visited by patients with respiratory disorders.

Secondly, the administration of mailed survey questionnaire resulted in 50 questionnaires (16.7% of initial identified survey respondents) being returned to the researcher due to invalid address. These surveys were mailed to the address recorded in the medical records of the Teaching Clinic. Thus, it would be beneficial to ask patients in the Teaching Clinic to update their contact information, such as residential address and contact telephone number, if there are any changes. By having updated contact information, not only it will ease survey administration in the future, but also for other purpose such as to facilitate the monitoring of Chinese medicine treatment progress (when necessary) and to disseminate latest information or education material to patients.

In terms of understanding treatment compliance, there were several well-established and widely used compliance tools in Western medicine, for example, medication adherence scale and inhaler adherence scale [183]. However, in Chinese medicine research, clinical trials on Chinese herbs usually assessed the participants' compliance by counting the untaken (by participants) herbs at certain intervals during the trial period (such as at weeks 0, 4 and 8) [215, 216] or at the end of trial [217]. In an earlier Chapter, the relationship between compliance and knowledge and treatment outcomes was discussed, and it is essential to develop a reliable and economical tool that can assess the compliance and provide insight on factor of non-compliance concurrently [218].

The present study adapted the compliance medication scale used by Dolce and colleagues [183] to assess compliance with Chinese medicine without asking about reasons for non-compliance. A previous study of CAM users with COPD identified several factors affecting their compliance with treatment, such as inconvenient size of the dosage form and unappealing taste or smell [24]. Hence, it is suggested that examination of the reasons for non-compliance will increase the beneficial effect of the treatment.

This survey questionnaire was a retrospective study, and the findings may have been affected by recall bias. This can be seen in respondents' answers to questions about their overall treatment outcome from Chinese medicine, where 6.8% (n=4) of respondents acknowledged they could not recall the effect. To address recall bias (which is intrinsic to retrospective study), several studies on CAM treatment and effects proposed to: perform a prospective study instead of a retrospective study [137, 139]; and ask patients about their treatment and treatment outcomes during the treatment course [139]. There are several methods for exploring treatment outcomes among patients, such as: asking patients to fill in the questionnaire: at the initial and last treatment [219]; at the initial treatment and follow-up questionnaire (by mail) after 4 weeks [137]; or incorporate an outcome measure tool as part of the medical records in CAM clinic [219].

Data from the survey questionnaire were anonymous and non-identifiable. This limitation prevents comparison of the survey data with data from medical records on variables such as disclosure of other treatment that the patients had and reports of adverse event.

4.5.2 Scope of Survey

This study focused on Chinese medicine usage for respiratory disorders, and the survey questionnaire was administered only to patients with respiratory disorders. The survey yielded data on patients' usage of health resources, treatment outcomes, communication with healthcare practitioners, compliance and knowledge of Chinese medicine. To gain a better insight into the clinic's population, patients' experience and behaviour, these survey data supplemented data abstracted from medical records. In developing more comprehensive data on general patients in the Teaching Clinic, future research can consider surveying all patients and not limiting the study to patients with a specific disorder.

Although there are several Chinese medicine teaching clinics in Australia, very few descriptive or outcome studies on patients of the teaching clinics have been published. To date, the one published study of Chinese medicine teaching clinic patients was by Meier and Rogers (162) described the patient population in the Acupuncture Clinic, University of Technology, Sydney. Descriptive and outcome data from teaching clinics is of use to educators, particularly for examining the experiences of patients when receiving the care, and the experiences of students in terms of providing treatment and their clinical learning (137). Because this survey was administered only to patients, it was limited in its scope. Student practitioners can also be surveyed to understand their views, experiences and the challenges they face in providing treatment and clinical learning. One survey of final year students of Chinese medicine programs in Australia explored their readiness to embrace the shift from student to practitioner (220). Their responses were valuable for educators to recognised areas of clinical practice that need to be reinforced during clinical learning and implemented appropriate measures to address it (220).

4.6 Conclusion

This survey questionnaire was mailed to patients with respiratory disorders and yielded response rate of 28.6%. Interestingly, the demographic characteristics of the survey respondents were not similar to patients who attended the Teaching Clinic in terms of gender and age. The feedback from respondents on pattern of Chinese medicine received for respiratory disorders was similar to pattern retrieved from reviewing medical records (Chapter 3). Most of the survey respondents reported the overall outcomes from Chinese medicine treatment were an improvement in their symptoms of respiratory disorders. Disclosure of other treatment usage to Chinese medicine practitioners was higher than disclosure of Chinese medicine usage to medical practitioners, with a more unfavourable perception on medical practitioners (compared with Chinese medicine practitioners) being associated with reasons for non-disclosure. The low disclosure rate of both other treatment and Chinese medicine to health practitioner is of concern, because there is growing concern of the safety of Chinese medicine. Regarding knowledge of Chinese medicine, about one third of respondents had good knowledge, but sections in which the respondents were less aware (such as regulation of Chinese medicine) were identified.

On the whole, this survey has implications ranging from patients and educators to priority setting in development of practice, policy and research. This survey offers understanding from patients' perspective, such as their behaviour in following Chinese medicine treatment, their use of other health services and their communication with healthcare professionals. These findings assist in determining the area of Chinese medicine practice that require improvement and additional research needs. Gaps in clinical training and additional training needs for Chinese medicine student practitioners in the Teaching Clinic were identified. These results may facilitate educators and student practitioners in managing patients and make them aware the barriers to communication with patients. The findings from this survey reinforce the need to promote safe use, knowledge and communication of Chinese medicine in patients.

CHAPTER 5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

Chinese medicine has expanded from its origins in China to become widely used across the world. As Chinese medicine has developed steadily, healthcare professionals (including Western medicine practitioners), researchers and policy makers have become concerned with the quality and safety of Chinese medicine treatments.

To monitor the quality and safety of Chinese medicine treatment in a teaching clinic setting, it is necessary to periodically gather data on the characteristics of patients, details of the types of Chinese medicine treatment provided and outcomes from Chinese medicine treatment. By gathering these data from the Chinese Medicine Teaching Clinic, in RMIT University, the quality and safety of Chinese medicine treatment provided by student practitioners can be audited. These data on the quality and safety of Chinese medicine treatment in the Teaching Clinic can serve as a baseline for future audits and be used to compare with other Chinese medicine clinic in community and university settings. In addition, the data provide insight into patients visiting the Teaching Clinic, including their demographic characteristics, behaviour, knowledge of Chinese medicine, and use of Chinese medicine and other treatments.

The findings from the current study enable us to identify the differences in the quality and safety of Chinese medicine treatment provided in the Teaching Clinic compared with other settings, and enables us to compare the theory learned by students in the classroom with actual practice in the Teaching Clinic. Hence, an analysis of quality and safety of Chinese medicine treatment, particularly in the Teaching Clinic, is of considerable value to researchers and educators.

5.2 General Findings

Before reviewing medical records in the Teaching Clinic, the researcher critically reviewed literature on medical record-based studies. The review summarised: means of evaluating quality and safety of treatment (specifically the indicator, standard and measurement scales that have been applied); and interventions that can improve treatment quality. Based on the structure of the medical records, types of data (e.g., process data for details of Chinese medicine treatment), scale measurements and quality standards (i.e., published literature) were chosen for the current study's medical record review. Because previous studies had identified limitations of retrospective medical record review, recommendations to improve the quality of the data collected was described accordingly. By making use of the readily available medical records as a research tool, the quality and safety of treatment can be periodically reviewed and monitored.

Some university-based Chinese medicine clinics in the US have analysed medical records to characterise the patients and conditions presenting to the clinics [121, 145]. Because this type of study had yet to be undertaken in the Chinese Medicine Teaching Clinic, RMIT University, this study was the first to critically review the Chinese medicine medical records. Some findings were similar to those of previous studies, including: the majority of patients were female, students and between 18 to 34 years old; patients mostly had other multiple medical conditions; and Chinese medicine treatment was commonly sought for musculoskeletal and pain disorders. The disease of interest in the current study, respiratory disorders (n=842 visits, 7.3%), was the fourth most common complaint in 2010 and 2011. Information on the type of respiratory disorders, pattern of Chinese medicine treatment and adverse events was retrievable from the medical records. However, because the medical records have been mainly developed for clinical purposes (rather than research purposes), some data on Chinese medicine treatment was limited or unavailable.

The second stage of data collection was a mailed questionnaire to patients with respiratory disorders to examine: treatment outcomes; knowledge of Chinese medicine; compliance with Chinese medicine treatment; and communication of Chinese medicine and Western medicine use with health care practitioners. The survey results found that most respondents acknowledged that Chinese medicine treatment improved their respiratory disorders symptoms. Most respondents had good knowledge of Chinese medicine and are moderately compliant with Chinese medicine treatment. In communicating their use of Chinese medicine and Western medicine with their health care practitioners, respondents acted differently: more respondents informed Chinese medicine practitioners about their Western medicine usage than vice versa.

The findings from both the medical record review and the survey questionnaire serve as a stepping stone to: improve documentation included in medical records (such as providing data on treatment outcome) [(221)]; provide data for morbidity research [(162)]; and inform curriculum design for the Chinese Medicine learning program [(162)]. Moreover, understanding the profile and behaviour of patients will facilitate marketing the clinic to potential patients and improve treatment quality.

5.3 Limitations of the Study

Limitations of both stages of the study, the medical record review (Chapter 3) and the survey questionnaire to patients with respiratory disorders (Chapter 4), have been described in detail in earlier Chapters. This Chapter summarises the general limitations of the study.

This current study aimed to investigate the overall use of Chinese medicine in a teaching clinic, with a focus on respiratory disorders. Data were retrospectively retrieved from medical records in the Chinese Medicine Teaching Clinic, RMIT University. However, medical records were generally developed for clinical and administrative purposes, rather than for research [(118)]. Medical records for research purposes requires more surveillance and visit-to-visit uniformity, compared with clinical practice [(107)]. Not all of the required information for research was available from the medical records (e.g., patients' treatment compliance). This limitation makes it difficult to identify whether inadequate care was provided or whether there was inadequate documentation in the medical records [(102)].

Earlier studies showed that patients with respiratory diseases tend to seek CAM (including Chinese medicine) [(23)], and that respiratory disorders are common in Australia [(2)]. Furthermore, a number of systematic reviews [(19, 222-225)] and clinical trials [(149, 153, 216, 226, 227)] have reported beneficial outcomes of Chinese medicine on respiratory disorders. This study focused on respiratory disorders, yet the total sample size of patients with respiratory disorders in 2010 and 2011 was small. The most common conditions for which patients visited the Teaching Clinic were for musculoskeletal and pain disorders. The small sample size of patients with respiratory disorders limits the current study's ability to perform detailed, sub-group analyses on factors such as treatment outcomes for certain diseases.

The second data collection tool, the survey questionnaire, was administered one to two years after patients' visits to the Teaching Clinic. This certainly introduced recall bias in the survey respondents. This was evidenced by the fact that some respondents could not recall: their visit for respiratory disorders purpose or the outcome of their Chinese medicine treatment (Chapter 4). Respondents who could not remember their visits for a respiratory disorder returned the survey without completing it. This further reduced the number of survey respondents.

Ideally, research in the Teaching Clinic should incorporate elements of public health, namely: quality control of practice; patient safety; and improving both quality control and safety [(228)]. Practices or interventions to improve the populations' health can be informatively determined based on evidence-based public health research. The elements of the evidence-based research are to: identify the gaps in practice; search and scrutinise evidence on interventions that can address the gaps; choose interventions that best suit population values; and assess the health effects of implemented intervention [(229)]. Both the medical record review (Chapter 3) and the survey (Chapter 4) gave insight on quality practice and treatment safety, and also identified the practice gaps in the Teaching Clinic. However, the critical review (Chapter 1) of medical record-based studies had focused more on method of conducting medical record studies, and had less emphasis on interventions that improve the gaps in treatment quality. Although Chapters 3 and 4 recommended interventions to improve treatment quality in the Teaching Clinic, the recommendations were not implemented and assessed in this study. These are some elements that have not been fully incorporated into the current project.

5.4 Recommendation

Based on the findings of this project, the recommendations can be focused on three aspects:

a) Public health project design for a similar research questions

If the number of patients with specific disease of interest (such as allergic rhinitis or asthma) is limited, qualitative methods, such as in-depth interview or focus group, can better explore the patients' health needs and experiences.

b) Medical records for teaching clinic

Revise the design of medical records in the Teaching Clinic to accommodate both clinical and research purposes. This could include: reinforcing the use of standardised clinical terminology; incorporating a documentation template for outcome-related data (e.g., health-related quality of life, disease-specific scales and patient-based measurements); and documenting reports of adverse events (for monitoring and further investigation).

c) Overall management of teaching clinic

To periodically update important patients' information, such as their medication history and contact information. Timely access to patients' information on Western medicine and other CAM treatment is essential for providing suitable and safe Chinese medicine treatment. Updated contact information is necessary, not only for research (recruiting participants for research) and administrative purposes, but also for clinical purposes such as monitoring the progress of patients and disseminating information to the patients.

Periodically review practice in the Teaching Clinic for: on-going monitoring and to improve quality, safety and outcomes of treatment; and to strengthen the Chinese medicine learning program offered in RMIT. The review can be in the form of a clinical audit as a continuous measure of quality improvement. The elements of clinical audit are: decide the topic of interest; identify criteria and standards; gather performance data retrospectively or prospectively; disseminate the findings to colleagues; recognise areas of practice that need to be improved; and re-assess the performance post-intervention [228].

REFERENCES

1. Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet [Internet]. 2013 [cited 2013 Feb 11];380(9859):2095-128. Available from: Scopus.
2. Australian Institute of Health and Welfare. Australia's health 2012. [Internet] Canberra: Australian Institute of Health and Welfare; 2012 [cited 2013 Feb 16]; Available from: http://www.aihw.gov.au/publication-detail/?id=10737422172.
3. Australian Institute of Health and Welfare. Chronic respiratory diseases in Australia: their prevalence, consequences and prevention. [Internet] Canberra: Australian Institute of Health and Welfare; 2005 [cited 2011 Sep 29]; Available from: http://www.aihw.gov.au/search/?q=National+Health+Survey%3a+asthma+and+other+respiratory+conditions.+ABS.
4. Britt H, Miller G, Charles J, Henderson J, Bayram C, Valenti L, et al. General practice activity in Australia 2010-20112011: Available from: http://hdl.handle.net/2123/7772.
5. Kurpas D, Mroczek B, Knap-Czechowska H, Bielska D, Nitsch-Osuch A, Kassolik K, et al. Quality of life and acceptance of illness among patients with chronic respiratory diseases. Respir Physiol Neurobiol [Internet]. 2013 [cited 2013 Mar 15];187(1):114-7. Available from: Scopus.
6. Dorland's illustrated medical dictionary [Internet]. [Internet] Philadelphia: Elsevier Health Sciences; 2011. Respiratory system. [cited 2013 Feb 15]; Available from: Credo Reference.
7. The human body book: an illustrated guide to its structure, function and disorders [Internet]. [Internet] London: Dorling Kindersley Publishing Inc; 2009. Respiratory system. [cited 2013 Feb 15]; Available from: Credo Reference.
8. Australian Institute of Health and Welfare. Asthma, chronic obstructive pulmonary disease and other respiratory diseases in Australia. [Internet] Canberra: Australian Institute of Health and Welfare; 2010 [cited 2011 Oct 3]; Available from: http://www.aihw.gov.au/publication-detail/?id=6442468361.
9. Australian Bureau of Statistics. Australian health survey: first results, 2011-2012. [Internet] Canberra: Australian Bureau of Statistics; 2012 Oct [cited 2013 May 15]; Available from: http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/1680ECA402368CCFCA257AC90015AA4E/$File/4364.0.55.001.pdf.
10. The Columbia encyclopedia [Internet]. [Internet] New York: Columbia University Press; 2013. Hay fever. [cited 2013 May 15]; Available from: Credo Reference.
11. Concise encyclopedia of science and technology [Internet]. [Internet] New York: McGraw-Hill; 2006. Influenza. [cited 2013 Feb 15]; Available from: Credo Reference.
12. Mosby's dictionary of medicine, nursing, & health professions [Internet]. [Internet] Philadelphia: Elsevier Health Sciences; 2009. Sinusitis. [2013 Feb 16]; Available from: Credo Reference.
13. McKenzie DK, Frith PA, Burdon JGW, Town GI. The COPDX plan: Australian and New Zealand guidelines for the management of chronic obstructive pulmonary disease 2003. Med J Aust [Internet]. 2003 [cited 2013 Feb 26];178(Suppl):S1-S39. Available from: Scopus.
14. Walters EH, Gibson Peter G, Lasserson Toby J, Walters Julia AE. Long-acting beta2-agonists for chronic asthma in adults and children where background therapy contains varied or no inhaled corticosteroid. Cochrane Database Syst Rev [Internet]. 2007 [cited 2013 Mar 17](1):Available from: Cochrane Library.

15. Becker Lorne A, Hom J, Villasis-Keever M, van der Wouden Johannes C. Beta2-agonists for acute bronchitis. Cochrane Database Syst Rev [Internet]. 2011(7):Available from: Cochrane Library.
16. Akinci AC, Zengin N, Yildiz H, Sener E, Gunaydin B. The complementary and alternative medicine use among asthma and chronic obstructive pulmonary disease patients in the southern region of Turkey. Int J Nurs Pract [Internet]. [Internet]. 2011 [cited 2013 May 14];17(6):571-82. Available from: Scopus.
17. Liu XM, Zhang MM, He L, Li YP. Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS). Cochrane Database Syst Rev [Internet]. 2012 [cited 2013 Feb 16](10):Available from: Cochrane Library.
18. Zhang XG, Wu TX, Zhang J, Yan Q, Xie LX, Liu Guan J. Chinese medicinal herbs for the common cold. Cochrane Database Syst Rev [Internet]. [Internet]. 2007 [cited 2013 May 11](1):Available from: Cochrane Library.
19. An X, Zhang AL, May BH, Lin L, Xu Y, Xue CCL. Oral chinese herbal medicine for improvement of quality of life in patients with stable chronic obstructive pulmonary disease: A systematic review. J Altern Complement Med [Internet]. 2012 [cited 2013 May 16];18(8):731-43. Available from: Scopus.
20. World Health Organization. Regional strategy for traditional medicine in the Western Pacific. [Internet] Manila: World Health Organization; 2002 [cited 2011 Aug 22]; Available from: http://www.wpro.who.int/publications/pub_9290610115/en/index.html.
21. Andrews G. Complementary and alternative medicine. In: Rob K, Nigel T, editors. International encyclopedia of human geography. Oxford: Elsevier; 2009.
22. Harris PE, Cooper KL, Relton C, Thomas KJ. Prevalence of Complementary and Alternative Medicine (CAM) use by the general population: a systematic review and update. Int J Clin Pract [Internet]. 2012 [cited 2013 Feb 14];66(10):924-39. Available from: Scopus.
23. Vincent C, Furnham A. Why do patients turn to complementary medicine? An empirical study. Br J Clin Psychol [Internet]. 1996 [cited 2013 Jul 23];35 (Pt 1):37-48. Available from: Medline.
24. George J, Ioannides-Demos LL, Santamaria NM, Kong DCM, Stewart K. Use of Complementary and Alternative Medicines by patients with Chronic Obstructive Pulmonary Disease. Med J Aust [Internet]. 2004 [cited 2013 Feb 14](181):248-51. Available from: http://www.mja.com.au.public/issues/181_05_060904/geo10146_fm.html.
25. Slader CA, Reddel HK, Jenkins CR, Armour CL, Bosnic-Anticevich SZ. Complementary and Alternative Medicine use in asthma: Who is using what? Respirology [Internet]. [Internet]. 2006 [cited 2013 Jun 23];11(4):373-87. Available from: Scopus.
26. Čižmešija T, Bergman-Marković B. Use of Complementary and Alternative Medicine among the patients in primary health care. Acta Med Croatica [Internet]. 2008 [cited 2013 May 14];62(1):15-22. Available from: Scopus.
27. Barbaso-Schwartz A. Traditional Chinese Medicine: ancient holistic healing. Home Health Care Manag Pract [Internet]. 2004 [cited 2012 May 15];16(6):494-98. Available from: Proquest.
28. Tique R. Traditional Chinese Medicine: a guide to its practice. Sydney: Choice Books; 1996.
29. Bensoussan A, Myers S. Towards a safer choice: the practice of Traditional Chinese Medicine in Australia [Internet]. New South Wales: University of Western Sydney Faculty of Health; 1996 [cited 2013 Feb 18]. Available from: http://www.health.vic.gov.au/archive/archive2006/chinese/report/contents.html.
30. Xue CCL, Zhang L, Lin V, Da Costa C, Story DF. Complementary and Alternative Medicine use in Australia : a national population-based survey. J Altern Complement Med [Internet]. 2007 [cited 2011 Aug 17];13(6):643-50. Available from: Scopus.

31. Xue CCL, Zhang AL, Lin V, Myers R, Polus B, Story DF. Acupuncture, chiropractic and osteopathy use in Australia: a national population survey. BMC Public Health [Internet]. 2008 [cited 2011 Nov 4];8:105. Available from: Medline.
32. Bensoussan A, Myers SP, Carlton AL. Risks associated with the practice of traditional Chinese medicine: an Australian study. Arch Fam Med [Internet]. [Internet]. 2000 [cited 2013 May 13];9(10):1071-8. Available from: Medline.
33. Men JZ, Guo L. A general introduction to Traditional Chinese Medicine. Boca Raton, FL: Taylor & Francis Inc; 2010.
34. Liao YQ. Traditional Chinese Medicine. Cambridge: Cambridge University Press; 2011.
35. Giovanni M. The practice of Chinese medicine : the treatment of diseases with acupuncture and Chinese herbs. 2nd ed. London: Churchil Livingstone; 2008.
36. Zhu B, Wang H. Basic Theories of Traditional Chinese Medicine: Jessica Kingsley Publishers; 2011.
37. McCarney Robert W, Brinkhaus B, Lasserson Toby J, Linde K. Acupuncture for chronic asthma. Cochrane Database Syst Rev [Internet]. [Internet]. 2003 [cited 2012 Oct 11](3):Available from: Cochrane Library.
38. Wang S, Tang Q, Qian W, Fan Y. Meta-analysis of clinical trials on traditional Chinese herbal medicine for treatment of persistent allergic rhinitis. Allergy [Internet]. 2012 [cited 2013 May 16](5):583-92. Available from: Cochrane Library.
39. Xue CCL, Lee C, Karagiannis J, Li CG, Yang AWH, Zhang AL, et al. Public attitudes towards Chinese medicine in Melbourne, Australia. J Complement Integr Med [Internet]. 2005 [cited 2011 Aug 17];2(1. Available from: http://www.bepress.com/jcim/vol2/iss1/8).
40. Bishop FL, Lewith GT. Who uses CAM a narrative review of demographic characteristics and health factors associated with CAM use. Evid Based Complement Alternat Med [Internet]. 2010 [cited 2013 Feb 19];7(1):11-28. Available from: Scopus.
41. Powell CB, Dibble SL, Dall'Era JE, Cohen I. Use of herbs in women diagnosed with ovarian cancer. Int J Gynecol Cancer [Internet]. 2002 [cited 2011 Nov 29];12(2):214-7. Available from: Scopus.
42. Wootton JC, Sparber A. Surveys of Complementary and Alternative Medicine : Part I. General trends and demographic groups. J Altern Complement Med [Internet]. 2001 [cited 2011 Aug 22];7(2):195-208. Available from: Scopus.
43. Zhang Y, Peck K, Spalding M, Jones BG, Cook RL. Discrepancy between patients' use of and health providers' familiarity with CAM. Patient Educ Couns [Internet]. 2012 [cited 2013 May 14];89(3):399-404. Available from: Scopus.
44. Li CG, Yang LP, Zhou SF. Interactions between Chinese herbal medicines and drugs. Aust J Acupunct Chin Med [Internet]. 2007 [cited 2011 Oct 26];2(1):17-24. Available from: http://search.informit.com.au.ezproxy.lib.rmit.edu.au/fullText;dn=451738736797821;res=IELHEA.
45. Zeller T, Muenstedt K, Stoll C, Schweder J, Senf B, Ruckhaeberle E, et al. Potential interactions of complementary and alternative medicine with cancer therapy in outpatients with gynecological cancer in a comprehensive cancer center. J Cancer Res Clin Oncol [Internet]. 2013 [cited 2013 Aug 19];139(3):357-65. Available from: Scopus.
46. Robinson A, McGrail MR. Disclosure of CAM use to medical practitioners: a review of qualitative and quantitative studies. Complement Ther Med [Internet]. [Internet]. 2004 [cited 2012 Oct 11];12:90-8. Available from: Science Direct.
47. Chung VCH, Ma PHX, Tang TSK, Lau CH, Kim JH, Griffiths SM. Do patients tell their clinicians they are using both prescribed and over the counter allopathic and traditional medicines? Eur J Integr Med [Internet]. [Internet]. 2011 [cited 2013 May 14];3(4):e283-e92. Available from: Scopus.

48. An X, Zhang AL, Yang AWH, Lin L, Wu DR, Guo XF, et al. Oral ginseng formulae for stable Chronic Obstructive Pulmonary Disease: a systematic review. Respir Med [Internet]. 2011 [cited 2013 Oct 31];105(2):165-76. Available from: Science direct.
49. Chen XY, Wu TX, Liu GJ, Wang Q, Zheng J, Wei J, et al. Chinese medicinal herbs for influenza. Cochrane Database Syst Rev [Internet]. 2007 [cited 2013 Feb 19];4. Available from: Scopus.
50. Roberts J, Huissoon A, Dretzke J, Wang D, Hyde C. A systematic review of the clinical effectiveness of acupuncture for allergic rhinitis. BMC Complement Altern Med [Internet]. 2008 [cited 2013 May 11];8. Available from: Scopus.
51. Therapeutic Goods Administration (TGA). The Australian clinical trial handbook: a simple, practical guide to the conduct of clinical trials to international standards of Good Clinical Practice (GCP) in the Australian context [Internet]. Woden (ACT, Australia): Therapeutic Goods Administration (TGA); 2006 [cited 2012 Apr 19]. Available from: http://www.tga.gov.au/industry/clinical-trials-handbook.htm.
52. Jiang LH, Li K, Wu TX. Chinese medicinal herbs for acute bronchitis. Cochrane Database Syst Rev [Internet]. 2012 [cited 2013 Feb 19](2):Available from: Cochrane Library.
53. Armstrong AR, Thiébaut SP, Brown LJ, Nepal B. Australian adults use complementary and alternative medicine in the treatment of chronic illness: a national study. Aust N Z J Public Health [Internet]. 2011;35(4):384-90. Available from: Scopus.
54. Incorvaia C, Riario-Sforza GG. Effect of patient education on adherence to drug treatment for Chronic Obstructive Pulmonary Disease. Ann Thorac Med [Internet]. [Letter to the Editor in Journal]. 2011 [cited 2011 Oct 12];6(4):242-3. Available from: Scopus.
55. Davis AM, Cannon M, Ables AZ, Bendyk H. Using the electronic medical record to improve asthma severity documentation and treatment among family medicine residents. Fam Med [Internet]. 2010 [cited 2013 Feb 20];42(5):334-7. Available from: Medline.
56. Gabbay J, Layton AJ. Evaluation of audit of medical inpatient records in a district general hospital. Qual Health Care [Internet]. 1992 [cited 2011 Sep 2];1(1):43-7. Available from: Medline.
57. Odero WW, Tierney WM, Einterz RM, Mungai S. Using an electronic medical record system to describe injury epidemiology and health care utilization at an inner-city hospital in Indiana. Inj Control Saf Promot [Internet]. 2004 [cited 2011 Sep 1];11(4):269-79. Available from: Medline.
58. International Organization for Standardization. Health informatics – electronic health record – definition, scope, and context. [Internet] Geneva: International Organization for Standardization (ISO); 2005 [cited 2012 Jul 29]; Available from: http://www.openehr.org/downloads/standards/iso/isotc215wg3_N202_ISO-TR_20514_Final_[2005-01-31].pdf.
59. Dickerson LM, Ables AZ, Everett CJ, Mainous Iii AG, McCutcheon AM, Bazaldua OV, et al. Measuring diabetes care in the National Interdisciplinary Primary Care Practice-Based Research Network (NIPC-PBRN). Pharmacotherapy [Internet]. 2011 [cited 2013 Feb 20];31(1):23-30. Available from: Scopus.
60. Ali T. Electronic medical record and quality of patient care in the VA. Med Health R I [Internet]. 2010 [cited 2011 Sep 22];93(1):8-10. Available from: Scopus.
61. World Health Organization. Medical records manual: a guide for developing countries. [Internet] Geneva: World Health Organization; 2006 [cited 2012 Jan 29]; Available from: http://www.wpro.who.int/publications/pub_9290610050.htm.
62. Häyrinen K, Saranto K, Nykänen P. Definition, structure, content, use and impacts of electronic health records: a review of the research literature. Int J Med Inform [Internet]. 2008 [cited 2012 Jul 29];77(5):291-304. Available from: Science Direct.
63. Himes BE, Dai Y, Kohane IS, Weiss ST, Ramoni MF. Prediction of Chronic Obstructive Pulmonary Disease (COPD) in asthma patients using electronic medical records.

J Am Med Inform Assoc [Internet]. 2009 [cited 2013 Mar 4];16(3):371-9. Available from: Scopus.
64. Goldenberg MJ. Defining "quality of care" persuasively. Theor Med Bioeth [Internet]. 2012 [cited 2012 Oct 2];33(4):243-61. Available from: Scopus.
65. Institute of Medicine. Medicare: a strategy for quality assurance. Lohr K, editor. Washington: National Academies Press; 1990.
66. Steffen GE. Quality medical care. A definition. J Am Med Assoc [Internet]. 1988 [cited 2012 Oct 30];260(1):56-61. Available from: Scopus.
67. Agency for Healthcare Research and Quality (US). Guide to healthcare quality: how to know it when you see it [Internet]. Rockville (MD): US Department of Health and Human Services; 2005 [cited 2012 Oct 3]. Available from: http://psnet.ahrq.gov/resource.aspx?resourceID=2666.
68. Rossi MCE, Nicolucci A, Arcangeli A, Cimino A, De Bigontina G, Giorda C, et al. Baseline quality-of-care data from a quality-improvement program implemented by a network of diabetes outpatient clinics. Diabetes Care [Internet]. 2008 [cited 2013 Feb 20];31(11):2166-8. Available from: Scopus.
69. Dy SM, Asch SM, Lorenz KA, Weeks K, Sharma RK, Wolff AC, et al. Quality of end-of-life care for patients with advanced cancer in an academic medical center. J Palliat Med [Internet]. 2011 [cited 2013 May 15];14(4):451-7. Available from: Cinahl.
70. Brook RH, McGlynn EA, Cleary PD. Part 2: measuring quality of care. N Engl J Med [Internet]. 1996 [cited 2012 Oct 2];335(13):966-70. Available from: Scopus.
71. Donabedian A. Evaluating the quality of medical care. Milbank Q [Internet]. 2005 [cited 2013 Feb 20];83(4):691-729. Available from: Scopus.
72. Liu B, Zhou X, Wang Y, Hu J, He L, Zhang R, et al. Data processing and analysis in real-world traditional Chinese medicine clinical data: challenges and approaches. Stat Med [Internet]. [Internet]. 2012 [cited 2013 Oct 23];31(7):653-60. Available from: Scopus.
73. Bunik M, Federico MJ, Beaty B, Rannie M, Olin J, Kempe A. Quality improvement for asthma care within a hospital-based teaching clinic. Acad Pediatr [Internet]. 2011 [cited 2013 Feb 20];11(1):58-65. Available from: Scopus.
74. Gill JM, Foy Jr AJ, Ling Y. Quality of outpatient care for diabetes mellitus in a national electronic health record network. Am J Med Qual [Internet]. 2006 [cited 2013 Feb 20];21(1):13-7. Available from: Cinahl.
75. Gill JM, Chen Y. Quality of lipid management in outpatient care: a national study using electronic health records. Am J Med Qual [Internet]. 2008 [cited 2013 Feb 20];23 (5):375-81. Available from: Embase.
76. Harris LT, Haneuse SJ, Martin DP, Ralston JD. Diabetes quality of care and outpatient utilization associated with electronic patient-provider messaging: a cross-sectional analysis. Diabetes Care [Internet]. 2009 [cited 2013 Feb 20];32(7):1182-7. Available from: Scopus.
77. Baker DW, Persell SD, Thompson JA, Soman NS, Burgner KM, Liss D, et al. Automated review of electronic health records to assess quality of care for outpatients with heart failure. Ann Intern Med [Internet]. 2007 [cited 2013 Feb 20];146 (4):270-7. Available from: Embase.
78. Bertoni AG, Duren-Winfield V, Ambrosius WT, McArdle J, Sueta CA, Massing MW, et al. Quality of heart failure care in managed Medicare and Medicaid patients in North Carolina. Am J Cardiol [Internet]. 2004 [cited 2013 Feb 20];93(6):714-8. Available from: Scopus.
79. Mangione-Smith R, DeCristofaro AH, Setodji CM, Keesey J, Klein DJ, Adams JL, et al. The quality of ambulatory care delivered to children in the United States. N Engl J Med [Internet]. 2007 [cited 2013 Feb 20];357 (15):1515-23. Available from: Embase.
80. Mularski RA, White-Chu F, Overbay D, Miller L, Asch SM, Ganzini L. Measuring pain as the 5th vital sign does not improve quality of pain management. J Gen Intern Med [Internet]. 2006 [cited 2013 Feb 20];21 (6):607-12. Available from: Embase.

81. Al Khaja KAJ, Sequeira RP, Damanhori AHH. Comparison of the quality of diabetes care in primary care diabetic clinics and general practice clinics. Diabetes Res Clin Prac [Internet]. 2005 [cited 2013 Feb 20];70(2):174-82. Available from: Scopus.
82. Garwood CL, Dumo P, Baringhaus SN, Laban KM. Quality of anticoagulation care in patients discharged from a pharmacist-managed anticoagulation clinic after stabilization of warfarin therapy. Pharmacotherapy [Internet]. 2008 [cited 2013 Feb 20];28(1):20-6. Available from: Medline.
83. Lange P, Andersen KK, Munch E, Sørensen TB, Dollerup J, Kassø K, et al. Quality of COPD care in hospital outpatient clinics in Denmark: The KOLIBRI study. Respir Med [Internet]. 2009 [cited 2013 Feb 20];103(11):1657-62. Available from: Scopus.
84. Jacobsen PB, Shibata D, Siegel EM, Lee JH, Fulp WJ, Alemany C, et al. Evaluating the quality of psychosocial care in outpatient medical oncology settings using performance indicators. Psycho-Oncology [Internet]. 2011 [cited 2013 Feb 20];20(11):1221-7. Available from: Scopus.
85. Goff Jr DC, Massing MW, Bertoni AG, Davis J, Ambrosius WT, McArdle J, et al. Enhancing quality of heart failure care in managed Medicare and Medicaid in North Carolina: results of the North Carolina Achieving Cardiac Excellence (NCACE) project. Am Heart J [Internet]. 2005 [cited 2013 May 2];150(4):717-24. Available from: Scopus.
86. Wilson IB, Landon BE, Marsden PV, Hirschhorn LR, McInnes K, Ding L, et al. Correlations among measures of quality in HIV care in the United States: cross sectional study. BMJ [Internet]. 2007 [cited 2013 Feb 20];335(7629):1085-8. Available from: Scopus.
87. Meehan TP, Wang Y, Tate JP, Curry M, Elwell A, Petrillo MK, et al. Improving the quality of preventive cardiovascular care provided by primary care physicians: insights from a US quality improvement organization. Int J Qual Health Care [Internet]. 2006 [cited 2013 Feb 20];18(3):186-94. Available from: Scopus.
88. Lee R, Onopa J, Mau MK, Seto TB. Diabetes care in a predominantly Native Hawaiian and Pacific Islander outpatient population. Hawaii Med J [Internet]. 2010 [cited 2013 Feb 20];69(5 Suppl 2):28-30. Available from: Scopus.
89. Harzallah F, Alberti H, Kanoun F, Elhouch F, Slimane H. Quality of care of patients with type 2 diabetes in a Tunisian university hospital. Diabetes Metab [Internet]. 2004 [cited 2013 Feb 20];30(6):523-6. Available from: Scopus.
90. Elger BS. Management and evolution of insomnia complaints among non-substance-misusers in a Swiss remand prison. Swiss Med Wkly [Internet]. 2004 [cited 2013 Feb 20];134(33-34):486-99. Available from: Scopus.
91. O'Connor PJ, Rush WA, Davidson G, Louis TA, Solberg LI, Crain L, et al. Variation in quality of diabetes care at the levels of patient, physician, and clinic. Prev Chronic Dis [Internet]. 2008 [cited 2013 Feb 20];5(1): Available from: Scopus.
92. Wang JS, Lin SY, Sheu WH, Lee IT, Tseng LN, Song YM. Effects of patient volume on quality of outpatient diabetes care. Diabetes Res Clin Pract [Internet]. 2009 [cited 2013 Feb 20];84(2):e27-9. Available from: Cinahl.
93. Lafata JE, Pladevall M, Divine G, Ayoub M, Philbin EF. Are there race/ethnicity differences in outpatient congestive heart failure management, hospital use, and mortality among an insured population? Med Care [Internet]. 2004 [cited 2013 Feb 20];42(7):680-9. Available from: Medline.
94. Grisel J, Arjmand E. Comparing quality at an ambulatory surgery center and a hospital-based facility: preliminary findings. Otolaryngol Head Neck Surg [Internet]. 2009 [cited 2013 Feb 20];141(6):701-9. Available from: Scopus.
95. Dawson B, Trapp R. Basic & clinical biostatistics. 4th ed. New York: McGraw-Hill Education; 2004.
96. Jacobsen KH. Introduction to Health Research Methods: Jones & Bartlett Learning; 2011.

97. Pincus T, Sokka T. Should contemporary rheumatoid arthritis clinical trials be more like standard patient care and vice versa? Ann Rheum Dis [Internet]. 2004 [cited 2013 Feb 22];63(Suppl 2):ii32-ii9. Available from: Scopus.
98. Jones ME. Diet and nutrition in Traditional Chinese Medicine. In: Yuan CS, Bieber EJ, Brent AB, editors. Traditional Chinese Medicine. London: Informa Healthcare; 2011.
99. Hunt SA, Baker DW, Chin MH, Cinquegrani MP, Feldman AM, Francis GS, et al. ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: executive summary. A report of the American College of Cardiology/American Heart Association task force on practice guidelines. Circulation [Intenet]. 2001 [cited 2013 Feb 20];104(24):2996-3007. Available from: Scopus.
100. Lilford R, Mohammed MA, Spiegelhalter D, Thomson R. Use and misuse of process and outcome data in managing performance of acute medical care: avoiding institutional stigma. Lancet [Intenet]. [Internet]. 2004 [cited 2014 Feb 15];363(9415):1147-54. Available from: Sciencedirect.
101. Caton C, Wiley MK, Zhao Y, Moran WP, Zapka J. Improving internal medicine residents' falls assessment and evaluation: an interdisciplinary, multistrategy program. J Am Geriatr Soc [Internet]. 2011 [cited 2013 Feb 20];59(10):1941-6. Available from: Medline.
102. Feigl P, Glaefke G, Ford L, Diehr P, Chu J. Studying patterns of cancer care: how useful is the medical record? Am J Public Health [Internet]. 1988 [cited 2013 Feb 20];78(5):526-33. Available from: Embase.
103. Fouwels AJ, Bredie SJ, Wollersheim H, Schippers GM. A retrospective cohort study on lifestyle habits of cardiovascular patients: how informative are medical records? BMC Health Serv Res [Internet]. 2009 [cited 2013 Jan 8];9. Available from: Scopus.
104. Klein Woolthuis EP, de Grauw WJ, van Gerwen WH, van den Hoogen HJ, van de Lisdonk EH, Metsemakers JF, et al. Identifying people at risk for undiagnosed type 2 diabetes using the GP's electronic medical record. Fam Pract [Internet]. 2007 [cited 2012 May 15];24(3):230-6. Available from: Medline.
105. Gaal S, Verstappen W, Wolters R, Lankveld H, van Weel C, Wensing M. Prevalence and consequences of patient safety incidents in general practice in the Netherlands: a retrospective medical record review study. Implement Sci [Internet]. 2011 [cited 2013 Feb 20];6(1):37. Available from: Medline.
106. Smits M, Huibers L, Kerssemeijer B, De Feijter E, Wensing M, Giesen P. Patient safety in out-of-hours primary care: a review of patient records. BMC Health Serv Res [Internet]. 2010 [cited 2013 Feb 20];10. Available from: Scopus.
107. Marmura MJ, Hopkins M, Andrel J, Young WB, Biondi DM, Rupnow MFT, et al. Electronic medical records as a research tool: Evaluating topiramate use at a headache center. Headache [Internet]. 2010 [cited 2013 Feb 20];50(5):769-78. Available from: Scopus.
108. McAdam-Marx C, Ye X, Sung JC, Brixner DI, Kahler KH. Results of a retrospective, observational pilot study using electronic medical records to assess the prevalence and characteristics of patients with resistant hypertension in an ambulatory care setting. Clin Ther [Internet]. 2009 [cited 2013 Feb 20];31(5):1116-23. Available from: Scopus.
109. Maddocks H, Marshall JN, Stewart M, Terry AL, Cejic S, Hammond JA, et al. Quality of congestive heart failure care: assessing measurement of care using electronic medical records. Can Fam Physician [Internet]. 2010 [cited 2013 Feb 20];56(12):e432-e7. Available from: Scopus.
110. Australian Institute of Health and Welfare. Australia’s health 2008. Internet. Canberra: Australian Institute of Health and Welfare2008. Report No.: ISBN 978 1 74024 762 7 Contract No.: 3 October
111. Chinese Medicine Board of Australia. Accreditation: approved programs of study. [Internet] Melbourne, VIC (Australia): Australian Health Practitioner Regulation Agency, Chinese Medicine Board of Australia; 2013 [updated 2012 Jul 17]; Available from: http://www.chinesemedicineboard.gov.au/Accreditation.aspx.

112. RMIT University. Chinese medicine teaching clinic. [Internet] Melbourne, VIC (Australia): RMIT University; 2013 [cited 2013 Mar 26]; Available from: http://www.rmit.edu.au/chinese-med/teaching-clinic.
113. Endeavour College of Natural Health. Natural medicine clinic. [Internet]: Endeavour College of Natural Health; 2013 [cited 2013 Mar 26]; Available from: http://www.endeavourclinics.com.au/.
114. Southern School of Natural Therapies. The wellbeing clinic. [Internet] Fitzroy, VIC (Australia): Southern School of Natural Therapies; 2013 [cited 2013 Mar 26]; Available from: http://www.ssnt.edu.au/clinic.
115. Sydney Institute of Traditional Chinese Medicine. SITCM clinic. [Internet] Sydney, NSW (Australia): Sydney Institute of Traditional Chinese Medicine; 2013 [cited 2013 Mar 26]; Available from: http://www.sitcm.edu.au/sitcm_clinic.html.
116. University of Technology Sydney. Traditional Chinese Medicine clinic. [Internet] Broadway, NSW (Australia): University of Technology Sydney; 2013 [cited 2013 Mar 26]; Available from: http://www.science.uts.edu.au/tcm/.
117. University of Western Sydney. School of Science and Health: UniClinic. [Internet] Penrith, NSW (Australia): University of Western Sydney; 2013 [updated 2012 Sep 21; cited 2013 Mar 26]; Available from: http://uws.edu.au/ssh/school_of_science_and_health/facilities/uniclinic.
118. Trinh NHT, Youn SJ, Sousa J, Regan S, Bedoya CA, Chang TE, et al. Using electronic medical records to determine the diagnosis of clinical depression. Int J Med Inform [Internet]. 2011 [cited 2013 Mar 4];80(7):533-40. Available from: Scopus.
119. Solomon DH, Avorn J, Sturmer T, Glynn RJ, Mogun H, Schneeweiss S. Cardiovascular outcomes in new users of coxibs and nonsteroidal antiinflammatory drugs: high-risk subgroups and time course of risk. Arthritis Rheum [Internet]. 2006 [cited 2013 Oct 17];54(5):1378-89. Available from: Medline.
120. May L, Carim M, Yadav K. Adult asthma exacerbations and environmental triggers: a retrospective review of ED visits using an electronic medical record. Am J Emerg Med [Internet]. 2011 [cited 2013 Feb 20];29(9):1074-82. Available from: Medline.
121. Cooper F. A chart review from an oriental medicine college, comparing patients who came for only one visit and those who came for at least five visits. Med Acupunct [Internet]. 2011 [cited 2013 May 14];23(2):107-10. Available from: Scopus.
122. Su K, Zhu F, Guo L, Zhu Y, Li W, Xiong X. Retrospective study on Professor Zhongying Zhou's experience in Traditional Chinese Medicine treatment on diabetic nephropathy. J Tradit Chin Med [Internet]. 2013 [cited 2014 Feb 15];33(2):262-7. Available from: Scopus.
123. National Cancer Institute (US). Common Terminology Criteria for Adverse Events (CTCAE). [Internet]: National Institutes of Health (NIH); 2009 [updated 2010 Jun 14; cited 2013 Mar 13]; Available from: http://evs.nci.nih.gov/ftp1/CTCAE/CTCAE_4.03_2010-06-14_QuickReference_8.5x11.pdf.
124. Lewis-Beck MS, Bryman AE, Liao TF. The SAGE encyclopedia of social science research methods. California: SAGE Publications; 2004.
125. Pallant J. SPSS survival manual: a step by step guide to data analyses using SPSS. 3rd ed. Sydney: Ligare Book Printer; 2007.
126. Corder GW, Foreman DI. Nonparametric statistics for non-statisticians: a step-by-step approach. New York: John Wiley & Son Inc; 2011.
127. Ho R. Handbook of univariate and multivariate data analysis and interpretation with SPSS. Broken Sound Parkway, NW: Taylor & Francis; 2006.
128. Department of Health (AU). Our regions. [Internet] Melbourne, VIC (Australia): Department of Health, Victorian State Government; [updated 2011 Sep 5; cited 2013 Jun 18]; Available from: http://www.health.vic.gov.au/regions/index.htm.

129. Online TMM. The Merck manual for health care professionals [Internet]. Whitehouse Station (NJ): Merck Sharp & Dohme Corp; 2013 [cited 2014 Feb 17]. Available from: http://www.merckmanuals.com/professional/musculoskeletal_and_connective_tissue_disorders.html.
130. Webster's new world™ medical dictionary [Internet]. Hoboken, NJ: Wiley Publishing; 2003. Holter monitor. [cited 2014 Feb 16]; Available from: Credo Reference.
131. World Health Organization. A proposed standard international acupuncture nomenclature: report of a WHO scientific group. [Internet] Geneva: World Health Organization; 1991 [cited 2013 Sep 11]; Available from: http://apps.who.int/iris/handle/10665/40001.
132. The Columbia encyclopedia [Internet]. New York: Columbia University Press; 2013. Common cold. [cited 16 Feb 2014]; Available from: Credo Reference.
133. Chinese Medicine Board of Australia. Codes and guidelines. [Internet] Melbourne, VIC (Australia): Australian Health Practitioner Regulation Agency, Chinese Medicine Board of Australia; 2013 [updated 12 April 2013; cited 2013 10 May]; Available from: http://www.chinesemedicineboard.gov.au/Codes-Guidelines.
134. Victorian population health survey 2010: selected findings. [Internet]: Integrated Care and Ageing Division of the Department of Health; 2010 [cited 2014 Feb 19]; Available from: http://www.health.vic.gov.au/healthstatus/survey/vphs2010.htm.
135. Frass M, Strassl RP, Friehs H, Müllner M, Kundi M, Kaye AD. Use and acceptance of Complementary and Alternative Medicine among the general population and medical personnel: a systematic review. Ochsner J [Internet]. 2012 [cited 2013 Apr 2];12(1):45-56. Available from: Scopus.
136. McFadden KL, Hernandez TD, Ito TA. Attitudes toward Complementary and Alternative Medicine influence its use. Explore (NY) [Internet]. 2010 [cited 2013 Feb 12];6(6):380-8. Available from: Medline.
137. Maiers M, McKenzie E, Evans R, McKenzie M. Patient outcomes at a Traditional Chinese Medicine teaching clinic: a prospective data collection project. J Altern Complement Med [Internet]. 2008 [cited 2012 May 15];14(9):1083-8. Available from: Scopus.
138. Bullock ML, Pheley AM, Kiresuk TJ, Lenz SK, Culliton PD. Characteristics and complaints of patients seeking therapy at a hospital-based alternative medicine clinic. J Altern Complement Med [Internet]. 1997 [cited 2012 May 15];3(1):31-7. Available from: Scopus.
139. Xing M, Long AF. A retrospective survey of patients at the University of Salford Acupuncture Clinic. Complement Ther Clin Pract [Internet]. [Internet]. 2006 [cited 2013 May 15];12(1):64-71. Available from: Scopus.
140. Kim KH, Kim YR, Noh SH, Kang KW, Kim JK, Yang GY, et al. Use of acupuncture for pain management in an academic Korean medicine hospital: a retrospective review of electronic medical records. Acupunct Med [Internet]. 2013 [cited 2013 Jul 23];31(2):228-34. Available from: Scopus.
141. Vincent A, Kruk KM, Cha SS, Bauer BA, Martin DP. Utilisation of acupuncture at an academic medical centre. Acupunct Med [Internet]. 2010 [cited 2013 Jul 23];28(4):189-90. Available from: Scopus.
142. Bullock ML, Pheley AM, Lenz SK, Culliton PD. Short-term outcomes of treatment for musculoskeletal disorders in a hospital-based Alternative and Complementary Medicine clinic. J Altern Complement Med [Internet]. 1999 [cited 2012 May 15];5(3):253-60. Available from: Scopus.
143. Grabowska C, Squire C, MacRae E, Robinson N. Provision of acupuncture in a university health centre - a clinical audit. Complement Ther Nurs Midwifery [Internet]. [Internet]. 2003 [cited 2013 Mar 7];9(1):14-9. Available from: Scopus.
144. Chao MT, Tippens KM, Connelly E. Utilization of group-based, community acupuncture clinics: a comparative study with a nationally representative sample of

acupuncture users. J Altern Complement Med [Internet]. 2012 [cited 2012 May 15];18(6):561-6. Available from: Scopus.
145. Greeson JM, Rosenzweig S, Halbert SC, Cantor IS, Keener MT, Brainard GC. Integrative medicine research at an academic medical center: patient characteristics and health-related quality-of-life outcomes. J Altern Complement Med [Internet]. 2008 [cited 2012 May 15];14(6):763-7. Available from: Scopus.
146. Australian Institute of Health and Welfare. Chronic disease. [Internet] Bruce, ACT (Australia): Australian Institute of Health and Welfare; 2013 [cited 2013 May 11]; Available from: http://aihw.gov.au/chronic-diseases/.
147. Mosby's dictionary of medicine, nursing, & health professions [Internet]. Philadelphia: Elsevier Health Sciences; 2012. Acute disease. [cited 2013 May 11]; Available from: Credo Reference.
148. Slavin RG, Spector SL, Bernstein IL, Kaliner MA, Kennedy DW, Virant FS, et al. The diagnosis and management of sinusitis: a practice parameter update. J Allergy Clin Immunol [Internet]. 2005 [cited 2013 May 11];116(6 Suppl):S13-S47. Available from: Scopus.
149. Scheewe S, Vogt L, Minakawa S, Eichmann D, Welle S, Stachow R, et al. Acupuncture in children and adolescents with bronchial asthma: a randomised controlled study. Complement Ther Med [Internet]. 2011 [cited 2012 Oct 11];19(5):239-46. Available from: Scopus.
150. Shahraz S, Barzanjeh A, Bahari A, Nadery Y, Farzadfar F, Beyranvand MR, et al. The completeness of medical records to assess quality of hospital care: the case of acute myocardial infarction in a district-level general hospital in Iran. Arch Iran Med [Internet]. 2012 [cited 2013 Jul 23];15(10):592-5. Available from: Scopus.
151. Lau TF, Leung PC, Wong ELY, Fong C, Cheng KF, Zhang SC, et al. Using herbal medicine as a means of prevention experience during the SARS crisis. Am J Chin Med [Internet]. 2005 [cited 2013 Oct 4];33(3):345-56. Available from: Scopus.
152. Poon PMK, Wong CK, Fung KP, Fong CYS, Wong ELY, Lau JTF, et al. Immunomodulatory effects of a traditional Chinese medicine with potential antiviral activity: a self-control study. Am J Chin Med [Internet]. 2006 [cited 2013 Oct 4];34(1):13-21. Available from: Scopus.
153. Lin CH, Wang MH, Chung HY, Liu CF. Effects of acupuncture-like transcutaneous electrical nerve stimulation on children with asthma. J Asthma [Internet]. 2010 [cited 2013 Oct 5];47(10):1116-22. Available from: Scopus.
154. World Health Organization. Medicines: safety of medicines – adverse drug reactions. [Internet] Geneva: World Health Organization; 2010 [cited 2013 Jul 24]; Available from: http://www.who.int/mediacentre/factsheets/fs293/en/.
155. McDowell JM, Johnson G, Hale L. Measuring practitioner opinion on adverse reactions to acupuncture. Aust J Acupunct Chin Med [Internet]. 2011 [cited 2013 Jul 23];6(2):28-35. Available from: Scopus.
156. MacPherson H, Liu B. The safety of Chinese herbal medicine: a pilot study for a national survey. J Altern Complement Med [Internet]. 2005 [cited 2013 Apr 5];11(4):617-26. Available from: Scopus.
157. Brand E. A clinician's guide to using granule extracts. Boulder, CO: Blue Poppy Press; 2010.
158. Chung A, Bui L, Mills E. Adverse effects of acupuncture. Which are clinically significant? Can Fam Physician [Internet]. [Internet]. 2003 [cited 2014 Feb 15];49(AUG.):985-9. Available from: Scopus.
159. The Royal Society of Medicine: medicines [Internet]. London: Bloomsbury Publishing Ltd; 2002. Clonidine. [cited 2014 Feb 16]; Available from: Credo Reference.
160. The Royal Society of Medicine: Medicines [Internet]. London: Bloomsbury Publishing Ltd; 2002. Guanethidine monosulphate. [cited 2014 Feb 16]; Available from: Credo Reference.

161. Ruan JW, Li SM, Wen M, Rao ZD, Hu YH. Analysis on adverse effects of acupuncture in clinical practices. Zhongguo zhen jiu [Internet]. [Internet]. 2009 [cited 2013 May 12];29(11):939-42. Available from: Scopus.
162. Meier PC, Rogers C. Reporting Traditional Chinese Medicine morbidity - a University of Technology, Sydney, project with an emphasis on developing standards for testing and reporting data. J Altern Complement Med [Internet]. 2006 [cited 2013 Jun 6];12(6):529-34. Available from: Scopus.
163. Marx BL, Rubin LH, Milley R, Hammerschlag R, Ackerman DL. A prospective patient-centered data collection program at an acupuncture and oriental medicine teaching clinic. J Altern Complement Med [Internet]. 2013 [cited 2013 Jun 12];19(5):410-5. Available from: Scopus.
164. Zhou XZ, Chen SB, Liu BY, Zhang RS, Wang YH, Li P, et al. Development of Traditional Chinese Medicine clinical data warehouse for medical knowledge discovery and decision support. Artif Intell Med [Internet]. 2010 [cited 2011 Aug 26];48(2-3):139-52. Available from: Scopus.
165. Harrington KF, Haven KM, Nuño VL, Magruder T, Bailey WC, Gerald LB. Parent report and electronic medical record agreement on asthma education provided and children's tobacco smoke exposure. J Asthma [Internet]. 2013 [cited 2014 Feb 15];50(9):968-74. Available from: Scopus.
166. Chan E, Tan M, Xin J, Sudarsanam S, Johnson DE. Interactions between traditional Chinese medicines and Western therapeutics. Curr Opin Drug Discov Devel [Internet]. [Historical article, review]. 2010 [cited 2011 Sep 11];13(1):50-65. Available from: Medline.
167. McDonald CJ. The barriers to electronic medical record systems and how to overcome them. J Am Med Inform Assoc [Internet]. 1997 [cited 2012 Jul 29];4(3):213-21. Available from: Medline.
168. McDonald CJ. The barriers to electronic medical record systems and how to overcome them. Journal of the American Medical Informatics Association. 1997 May-Jun;4(3):213-21.
169. Holroyd-Leduc JM, Lorenzetti D, Straus SE, Sykes L, Quan H. The impact of the electronic medical record on structure, process, and outcomes within primary care: a systematic review of the evidence. J Am Med Inform Assoc [Internet]. 2011 [cited 2012 Jul 29];18(6):732-7. Available from: Scopus.
170. Ventura ML, Battan AM, Zorloni C, Abbiati L, Colombo M, Farina S, et al. The electronic medical record: pros and cons. J Matern Fetal Neonatal Med [Internet]. [Internet]. 2011 [cited 2014 Feb 15];24(SUPPL. 1):163-6. Availabel from: Scopus.
171. Bjering H, Ginige A, Maeder A, Bensoussan A, Zhu X, Lattuca C. Electronic medical record information system for patient consultations in Chinese medicine. Stud Health Technol Inform [Internet]. 2011 [cited 2011 Sep 11];168:10-5. Available from: Medline.
172. Lal LS, Gerber DL, Lau J, Dana W. Retrospective evaluation of weekly paclitaxel hypersensitivity reactions reported utilizing an electronic medical record system at a tertiary cancer center. Support Care Cancer [Internet]. 2009 [cited 2013 Apr 4];17(10):1311-5. Available from: Scopus.
173. Wu T, Shang H, Bian Z, Zhang J, Li T, Li Y, et al. Recommendations for reporting adverse drug reactions and adverse events of Traditional Chinese Medicine. J Evid Based Med [Internet]. 2010 [cited 2013 Feb 19];3(1):11-7. Available from: Scopus.
174. Siddiqui S, Gonem S, Wardlaw A. Advances in the management of severe asthma. Semin Respir Crit Care Med [Internet]. 2012 [cited 2013 Jun 23];33(6):666-84. Available from: Scopus.
175. Cote J, Cartier A, Robichaud P, Boutin H, Malo JL, Rouleau M, et al. Influence of asthma education on asthma severity, quality of life and environmental control. Can Respir J [Internet]. 2000 [cited 2013 May 14];7(5):395-400. Available from: Scopus.

176. An MH, Choi JY. Relationship of knowledge, attitude, correct metered dose inhaler use, and self-management compliance among patients with COPD. Korean J Adult Nurs [Internet]. 2012 [cited 2013 Jul 12];24(2):160-70. Available from: Scopus.
177. Prabhakaran L, Lim G, Abisheganaden J, Chee CBE, Choo YM. Impact of an asthma education programme on patients' knowledge, inhaler technique and compliance to treatment. Singapore Med J [Internet]. 2006 [cited 2011 Oct 13];47(3):225-31. Available from: Scopus.
178. McColl E, Jacoby A, Thomas L, Soutter J, Bamford C, Steen N, et al. Design and use of questionnaires: a review of best practice applicable to surveys of health service staff and patients. Health Technol Assess [Internet]. 2001 [cited 2013 May 22];5(31):i-v+1-250. Available from: Scopus.
179. Gideon L. Handbook of survey methodology for the social sciences. London: Springer; 2012.
180. Armstrong BK, White E. Principles of exposure measurement in epidemiology. Oxford: Oxford University Press; 1994.
181. McLeod CC, Klabunde CN, Willis GB, Stark D. Health care provider surveys in the United States, 2000-2010: a review. Eval Health Prof [Internet]. 2013 [cited 2013 Jun 7];36(1):106-26. Available from: Scopus.
182. Sutton AL, editor. Complementary and alternative medicine sourcebook. 4th ed. United States: Peter E. Ruffner; 2010.
183. Dolce JJ, Crisp C, Manzella B, Richards JM, Hardin JM, Bailey WC. Medication adherence patterns in Chronic Obstructive Pulmonary Disease. Chest [Internet]. 1991 [cited 2011 Oct 12];99(4):837-41. Available from: Scopus.
184. George J, Kong DCM, Thoman R, Stewart K. Factors associated with medication nonadherence in patients with COPD. Chest [Internet]. 2005 [cited 2011 Oct 11];128(5):3198-204. Available from: Scopus.
185. Alshagga MA, Al-Dubai SA, Muhamad Faiq SS, Yusuf AA. Use of Complementary and Alternative Medicine among asthmatic patients in primary care clinics in Malaysia. Annals of Thoracic Medicine [Internet]. 2011 [cited 2013 Jul 13];6(3):115-9. Available from: Scopus.
186. Wolff AM, Bourke J. Detecting and reducing adverse events in an Australian rural base hospital emergency department using medical record screening and review. Emerg Med J [Internet]. [Internet]. 2002 [cited 2012 Oct 11];19(1):35-40. Available from: PubMed.
187. Bourbeau J, Bartlett SJ. Patient adherence in COPD. Thorax [Internet]. [Review]. 2008 [cited 2011 Oct 12];63(9):831-8. Available from: Scopus.
188. Okuyan B, Sancar M, Izzettin FV. Assessment of medication knowledge and adherence among patients under oral chronic medication treatment in community pharmacy settings. Pharmacoepidemiol Drug Saf [Internet]. 2013 [cited 2013 Jun 23];22(2):209-14. Available from: Scopus.
189. Aday LA, Cornelius LJ. Designing and conducting health surveys; a comprehensive guide. San Francisco: John Wiley & Sons Inc; 2006.
190. Stephens JL, Lowman JD, Graham CL, Morris DM, Kohler CL, Waugh JB. Improving the validity and reliability of a health promotion survey for physical therapists. Cardiopulm Phys Ther J [Internet]. 2013 [cited 2013 Aug 29];24(1):14-23. Available from: Medline.
191. Cohen J. A coefficient of agreement for nominal scales. Educ Psychol Meas [Internet]. 1960 [cited 2013 Jun 2];20(1):37-46. Available from : http://epm.sagepub.com/content/20/1/37.short.
192. Rosner BA. Fundamentals of biostatistics. Florence: Cengage Learning Inc; 2011.
193. Chen B, Bernard A, Cottrell R. Differences between family physicians and patients in their knowledge and attitudes regarding Traditional Chinese Medicine. Integr Med [Internet]. 1999 [cited 2011 Oct 26];2:45-55. Available from: Science Direct.
194. Portney LG, Watkins MP. Foundations of clinical research: applications to practice. Upper Saddle River, NJ: Pearson Prentice Hall; 2009.

195. Buckingham A, Saunders P. The survey methods workbook: from design to analysis. Oxford: Polity Press; 2004.
196. Edwards Philip J, Roberts I, Clarke Mike J, DiGuiseppi C, Wentz R, Kwan I, et al. Methods to increase response to postal and electronic questionnaires. Cochrane Database Syst Rev [Internet]. 2009 [cited 2013 Feb 25](3):Available from: Cochrane Library.
197. Nakash RA, Hutton JL, Jørstad-Stein EC, Gates S, Lamb SE. Maximising response to postal questionnaires - a systematic review of randomised trials in health research. BMC Med Res Methodol [Internet]. 2006 [cited 2013 Jul 31];6. Available from: Scopus.
198. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Ann R Coll Surg Engl [Internet]. [Internet]. 2013 [cited 2014 Feb 15];95(1):5-7. Available from: PubMed.
199. Emmerton L, Fejzic J, Tett SE. Consumers' experiences and values in conventional and alternative medicine paradigms: A problem detection study (PDS). BMC Complement Altern Med [Internet]. 2012 [cited 2013 Jul 11];12. Available from: Scopus.
200. Sykes LL, Walker RL, Ngwakongnwi E, Quan H. A systematic literature review on response rates across racial and ethnic populations. Can J Public Health [Internet]. 2010 [cited 2013 Jun 23];101(3):213-9. Available from: Medline.
201. Australian Bureau of Statistics. Australian social trends 2010: moving house. [Internet] Canberra: Australian Bureau of Statistics; 2010 [cited 2013 Jun 8]; Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features30Dec+2010.
202. Lall R, Mistry D, Bridle C, Lamb SE. Telephone interviews can be used to collect follow-up data subsequent to no response to postal questionnaires in clinical trials. J Clin Epidemiol [Internet]. 2012 [cited 2013 Jun 24];65(1):90-9. Available from: Scopus.
203. Spinks J, Hollingsworth B. Policy implications of Complementary and Alternative Medicine use in Australia: data from the National Health Survey. J Altern Complement Med [Internet]. 2012 [cited 2013 Jul 25];18(4):371-8. Available from: Scopus.
204. World Health Organization. New WHO guidelines to promote proper use of alternative medicines. [Internet] Geneva: World Health Organization; 2004 [cited 2013 Jul 24]; Available from: http://www.who.int/mediacentre/news/releases/2004/pr44/en/.
205. Thomson P, Jones J, Evans JM, Leslie SL. Factors influencing the use of complementary and alternative medicine and whether patients inform their primary care physician. Complement Ther Med [Internet]. 2012 [cited 2013 Jun 10];20(1-2):45-53. Available from: Scopus.
206. Chinese Medicine Board of Australia. Newsletter May 2013. [Internet] Melbourne (Australia): Chinese Medicine Board of Australia; 2013 [cited 2013 Jul 24]; Available from: http://www.chinesemedicineboard.gov.au/News/Newsletters/May-2013.aspx.
207. Chen C, Lee DSH, Hie SL. The impact of pharmacist's counseling on pediatric patients' caregiver's knowledge on epilepsy and its treatment in a tertiary hospital. Int J Clin Pharm [Internet]. 2013 [cited 2013 Jul 19]:1-6. Available from: Scopus.
208. Hall B, Lee HC, Fitzgerald H, Byrne B, Barton A, Lee AH. Investigating the effectiveness of full-time wrist splinting and education in the treatment of carpal tunnel syndrome: a randomized controlled trial. Am J Occup Ther [Internet]. 2013 [cited 2013 Jul 26];67(4):448-59. Available from: Scopus.
209. Mansouri K, Iliev ME, Rohrer K, Shaarawy T. Compliance and knowledge about glaucoma in patients at tertiary glaucoma units. Int Ophthalmol [Internet]. 2011 [cited 2013 Jul 12];31(5):369-76. Available from: Scopus.
210. Galletti F, Sturniolo MG. Counseling children and parents about epilepsy. Patient Educ Couns [Internet]. 2004 [cited 2013 Jul 22];55(3):422-5. Available from: Scopus.
211. Standing Joseph F, Savage I, Pritchard D, Waddington M. Diclofenac for acute pain in children. Cochrane Database Syst Rev [Internet]. 2009 [cited 2013 Jul 25](4):Available from: Cochrane Library.

212. Park JE, Lee MS, Choi JY, Kim BY, Choi SM. Adverse events associated with acupuncture: a prospective survey. J Altern Complement Med [Internet]. 2010 [cited 2013 Jul 10];16(9):959-63. Available from: Scopus.
213. Sandars J, Esmail A. The frequency and nature of medical error in primary care: understanding the diversity across studies. Fam Pract [Internet]. 2003 [cited 2011 Dec 14];20(3):231-6. Available from: Medline.
214. Wetzels R, Wolters R, Van Weel C, Wensing M. Mix of methods is needed to identify adverse events in general practice: a prospective observational study. BMC Fam Pract [Internet]. 2008 [cited 2011 Dec 13];9. Available from: Scopus.
215. Tong XL, Wu ST, Lian FM, Zhao M, Zhou SP, Chen XY, et al. The safety and effectiveness of TM81, a Chinese herbal medicine, in the treatment of type 2 diabetes: a randomized double-blind placebo-controlled trial. Diabetes Obes Metab [Internet]. 2013 [cited 2013 Jul 25];15(5):448-54. Available from: Scopus.
216. Chan CK, Kuo ML, Shen JJ, See LC, Chang HH, Huang JL. Ding Chuan Tang, a Chinese herb decoction, could improve airway hyper-responsiveness in stabilized asthmatic children: a randomized, double-blind clinical trial. Pediatr Allergy Immunol [Internet]. [Randomized Controlled Trial; Research Support, Non-U.S. Gov't]. 2006 [cited 2013 Jul 25];17(5):316-22. Available from: Cochrane Library.
217. Cao H, Ren M, Guo L, Shang H, Zhang J, Song Y, et al. JinQi-Jiangtang tablet, a Chinese patent medicine, for pre-diabetes: a randomized controlled trial. Trials [Internet]. [Internet]. 2010 [cited 2013 Jul 25];11:27. Available from: Cochrane Library.
218. Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive validity of a medication adherence measure in an outpatient setting. J Clin Hypertens (Greenwich) [Internet]. 2008 [cited 2012 Oct 8];10(5):348-54. Available from: Medline.
219. Secor Jr ER, Blumberg JH, Markow MJ, MacKenzie J, Thrall RS. Implementation of outcome measures in a Complementary and Alternative Medicine clinic: evidence of decreased pain and improved quality of life. J Altern Complement Med [Internet]. 2004 [cited 2012 Nov 30];10(3):506-13. Available from: Scopus.
220. Moore A, Canaway R, O'Brien KA. Chinese medicine students' preparedness for clinical practice: an Australian survey. J Altern Complement Med [Internet]. 2010 [cited 2013 Jul 11];16(7):733-43. Available from: Scopus.
221. Maiers M, McKenzie E, Evans R, McKenzie M. The development of a prospective data collection process in a traditional Chinese medicine teaching clinic. J Altern Complement Med [Internet]. 2009 [cited 2013 Mar 8];15(3):305-20. Available from: Scopus.
222. Zhao YH, Liu ZL, Li LH, Jiang SH, Shi CH. Systematic review of randomized controlled trials of Traditional Chinese Medicine treatment of non-acute bronchial asthma complicated by gastroesophageal reflux. J Tradit Chin Med [Internet]. 2012 [cited 2013 May 11];32(1):12-8. Available from: Scopus.
223. Xue CCL, Zhang CS, Yang AW, Zhang AL, Li Y, Xia J, et al. Semi-self-administered ear acupressure for persistent allergic rhinitis: a randomised sham-controlled trial. Ann Allergy Asthma Immunol [Internet]. 2011 [cited 2013 Oct 8];106(2):168-70. Available from: Scopus.
224. Shergis JL, Zhang AL, Zhou W, Xue CCL. Panax ginseng in randomised controlled trials: a systematic review. Phytother Res [Internet]. 2013 [cited 2013 Oct 8];27(7):949-65. Available from: Scopus.
225. Wu L, Chen Y, Xu Y, Guo X, Li X, Zhang AL, et al. Oral huangqi formulae for stable chronic obstructive pulmonary disease: a systematic review and meta-analysis. Evid Based Complement Alternat Med [Internet]. 2013 [cited 2013 Oct 8];2013:Available from: Medline.
226. Brinkhaus B, Hummelsberger J, Kohnen R, Seufert J, Hempen CH, Leonhardy H, et al. Chinese medicine therapy including acupuncture and Chinese herbal medicine in patients with seasonal allergic rhinitis: a randomized, controlled trial. Chinesische Medizin [Internet]. 2005 [cited 2013 May 11];20(2):47-58. Available from: Scopus.

227. Choi JY, Jung HJ, Kim JI, Lee MS, Kang KW, Roh YL, et al. A randomized pilot study of acupuncture as an adjunct therapy in adult asthmatic patients. J Asthma [Internet]. 2010 [cited 2013 Oct 5];47(7):774-80. Available from: Scopus.
228. Walley J, Wright J. Public health: an action guide to improving health. Oxford: Oxford University Press; 2010.
229. Fink A. Evidence-based public health practice. California: Sage Publications; 2012.

Appendix A Search Strategy to Identify Medical Record Studies in Medline

Group 1

Search	Search terms
#1	“medical records systems, computerized"[MeSH]
#2	“computerized medical records systems"[Title/Abstract]
#3	“computerized medical record system”[Title/Abstract]
#4	“computerized patient medical records"[Title/Abstract]
#5	"medical records"[MeSH]
#6	"medical record"[Title/Abstract]
#7	"health record"[Title/Abstract]
#8	"health records"[Title/Abstract]
#9	"electronic health records"[MeSH]
#10	"electronic health record"[Title/Abstract]
#11	"electronic medical record"[Title/Abstract]
#12	"electronic medical records"[Title/Abstract]
#13	"health records, personal"[MeSH]
#14	"personal health record"[Title/Abstract]
#15	"personal health records"[Title/Abstract]
#16	"personal medical records"[Title/Abstract]
#17	"personal medical record"[Title/Abstract]
#18	((#1 OR #2) OR #3) OR #4) AND #5) OR #6) OR #7) OR #8) OR #9) OR #10) OR #11) OR #12) OR #13) OR #14) OR #15) OR #16) OR #17)
#19	#18, Limits: Humans, Journal Article, English.

Group 2

Search	**Search terms**
#20	outpatients [MeSH]
#21	outpatient[Title/Abstract]
#23	"out-patients"[Title/Abstract]
#24	"out patients"[Title/Abstract]
#25	"outpatient clinics, hospital” [MeSH]
#26	"hospital outpatient clinics"[Title/Abstract]
#27	“hospital outpatient clinic"[Title/Abstract]
#28	"outpatient clinic "[Title/Abstract]
#29	"hospital outpatient "[Title/Abstract]
#30	#20) OR #21) OR #22) OR #23) OR #24) OR #25) OR #26) OR #27) OR #28 OR #29
#31	#30 , Limits: Humans, Journal Article, English

Search	**Search terms**
#32	(#19) AND #31

Appendix B Human Ethics Study Approval Form

RMIT UNIVERSITY

HREC 10/11

Received in Research & Innovation / CHEAN Office 4/12/12
To HREC / CHEAN Meeting /1 Accepted 19/12/12

Approved 30/6/13.

Request for Amendment/Extension of Human Research Ethics project

Note: This form is intended to be completed as an electronic document and is set up as a series of tables. The table will enlarge to the size you require as you type or press the Enter key. For check boxes, double click on the left mouse button and a 'check boxes form field' dialog box will appear: choose 'Checked' and 'OK'. If you want to uncheck it, double click on left mouse button and a 'check boxes form field' dialog box will appear: choose 'Not checked' and 'OK'.

All changes to a project must be approved before they are implemented. If data collection continues beyond the date for which the project was approved then the project is considered to be not approved and data collected will un-useable.

Project No:	**Project title:**
HREC 02/12	Public Health Issue related to Chinese medicine usage in respiratory diseases

Project approved until:	31 December 2012

Project being undertaken for award of degree:	Hons ☐	Masters ☒	PhD ☐	Not applicable ☐

Principal Investigator	Dr Tony Zhang
Email	tony.zhang@rmit.edu.au
Address:	Discipline of Chinese Medicine RMIT Bundoora Campus Bundoora VIC 3083
~~**Name of Supervisor**~~ (if applicable): Co-investigators	Dr Iris Wenyu Zhou Prof Charlie Xue

Project summary	**Summarise the original project. Assume when preparing your summary that the reader does not have a copy of the original application so this summary needs to 'stand alone'.**

This project investigates public health issues related to Chinese medicine usages in a teaching clinic in Melbourne. It consists of two stages. The first stage is to review patient medical records (for those seen in the years 2010 and 2011) at the Chinese Medicine Teaching Clinic, RMIT University. This will provide detailed information on the patient characteristics and conditions commonly treated in this clinic. Patients presenting with common respiratory diseases (such as asthma, COPD, hay fever, influenza and pneumonia) will be identified. The second stage is to administer mail survey to the identified patients with respiratory diseases.

This project will provide data for a teaching clinic on patients' characteristics, common presenting conditions, knowledge and compliance of treatment, treatment outcomes, actual and perceived adverse events, and their opinion on the treatments.

Appendix C New Client Information Sheet of New Patients in the RMIT's Chinese Medicine Teaching Clinic

29/08 2011 MON 22:26 FAX +613 9467 5829 RMIT SCHL HEALTH SCIENCE →→→ Chinese Med Bld 20 002/004

RMIT UNIVERSITY

THE CHINESE MEDICINE UNIT

NEW CLIENT INFORMATION SHEET

FIRST NAME________________ FAMILY NAME________________

PARENT'S NAME (if age under 10 years old) ________________

GENDER: F M DATE OF BIRTH: / /

NUMBER OF CHILDREN: Age:

CONTACT NUMBERS:

HOME: ________________

WORK: ________________

MOBILE: ________________

CONTACT ADDRESS:
Street & No: ________________

Suburb: ________________ Postcode: ________

Please tick P the following questions that may relate to your previous or present situations and circle ™ the relative terms.

Injury, weakness, numbness or sore limbs, neck, head or back

Skin disorders (eczema, psoriasis)

Prolonged bleeding or easy bruising

Asthma, hay fever or other difficult breathing conditions

Digestive problems (ulcer, irritable bowel syndrome, heartburn or indigestion etc)

Liver disease (hepatitis or unknown jaundice etc.)

Kidney disorders (stones, infection or functional failure)

Heart problems (irregular heart beat, palpitations, tightness in chest or pain (angina), high blood pressure or high cholesterol)

Family medical history or others, please indicate below

____

____

Have you ever been treated by any Chinese Medical Practitioners before? Yes No

Is there any of the following treatment that you do not want to be applied to you today?

Acupuncture Cupping

Herbal Pills Chinese Herbal decoctions

Appendix D Patient Consent Forms in the Teaching Clinic

29/08 2011 MON 22:27 FAX +613 9467 5829 RMIT SCHL HEALTH SCIENCE →→→ Chinese Med Bld 20 003/004

Thank you for taking the information sheet and co-operating with us in the session

Please read the information on this form carefully before you sign.
Please ask if you need help to understand any part of this form, or
you want anything explained further.

RMIT
The Chinese Medicine Teaching Clinic
The Chinese Medicine Unit

PATIENT CONSENT FORM

I attend RMIT Chinese Medicine Teaching Clinic as a patient for consultation including Chiense Herbal Medicine and / or Acupuncture treatments. These procedures will be conducted by senior Chinese Medicine / Acupuncture students studying in the Chinese Medicine / Acupuncture programs at RMIT University. I understand that the consultation may be observed by junior Chinese Medicine / Acupuncture students. However, all information provided by me is strictly confidential. All students are fully aware of this issue. I am advised that no treatment will be given to me without the presence of the attending clinician.

I understand that this clinic is a teaching clinic of RMIT and hereby give permission for the information contained within this file to be used within the approved protocols of The Chinese Medicine Unit of RMIT for teaching purposes. This is on the condition that no information may identify the patient as an individual will be discussed outside the clinic, and with the understanding that may revoke this permission at any time without prejudicing due care and treatment.

I accept financial responsibility for my treatment in this clinic, or for the treatment of the below minor under my care, and agree to pay the fees which have been explained to me at the time service is rendered unless have made a prior arrangement with the Co-ordinator of RMIT Chinese Medicine Teaching Clinic.

I have read, or have had read to me and explained to my satisfaction, the above statements and I understand what they say. I hereby consent to treatment for myself or for the below minor under my care.

Signed Name: Signature: Date: / /

of Number/ Street: Suburb: PC:

Witnessed by Name: Signature: Date: / /

For patients under 18 years of age, please have your parent/s or legal guardian complete this section as well:

I, ______________________ being the parent or legal guardian of
Print given name(s) and family name

______________________ hereby consent to this person receiving
Patient given name(s) and family name

Chinese Herbal Medicine and / or Acupuncture treatment in this clinic.

Signature: Date:

29/08 2011 MON 22:27 FAX +613 9467 5829 RMIT SCHL HEALTH SCIENCE → Chinese Med Bld 20 004/004

RMIT POLYCLINIC
BUNDOORA Chinese Medicine Teaching Clinic
A teaching clinic of RMIT University.

RMIT UNIVERSITY

Privacy Consent Form

The Division of Chinese Medicine and its teaching clinics are subject to new legislation aimed at protecting the privacy of personal information including health and medical records. As part of its function, the Division collects, uses and discloses such information. From time to time, it also uses this information, in a de-identified format, for research purposes. This document is a request to you to provide your consent to the use and disclosure of your personal information in certain circumstances.

I Mr./Mrs./Ms.________________________________understand that this clinic is a teaching clinic of RMIT University and in this role will collect certain personal information about me in relation to the diagnosis and/or treatment of a health-related condition. I hereby consent to the personal information in my file being used within the approved protocols of the Division of Chinese for case discussion, teaching, research, and examination purposes.

.... *Signature*

I also understand that I may revoke this permission at any time without prejudicing due care and treatment.

Signature ....

Date ....

(Signatures must be obtained in front of a witness - reception staff, clinician, student over 18)

Witness Signature ....

Date ....

Appendix E Sources of Knowing about the Teaching Clinic

29/08 2011 MON 22:26 FAX +613 9467 5829 RMIT SCHL HEALTH SCIENCE →→→ Chinese Med Bld 20 001/004

RMIT UNIVERSITY

The Chinese Medicine Teaching Clinic would like to seek your kind assistance for the completion of this form to facilitate our monitoring of patient sources. Please tick one of the following boxes when you first attend the clinic:

Name of Person:	
Date of visit:	
Are you:	
Member of Public	☐
RMIT Staff	☐
RMIT Student	☐
Total Visitors:	
Where did you hear about the RMIT Chinese Medicine Teaching Clinic (please tick):	
Advertisement – Whittlesea Leader	☐
RMIT Website	☐
From your school	☐
RMIT Alumni	☐
Family	☐
Friends	☐
RMIT staff member	☐
RMIT student	☐
Open Day	☐
RMIT Staff Global E-mail news	☐
RMIT Bundoora Focus Staff Newsletter	☐
Faculty of Life Sciences Staff Bulletin	☐
Media	☐
Chiropractic student referral	☐
Osteopathic student referral	☐
Other – please list below	☐
Total:	

Appendix F Comprehensive Case Record on Initial Visit to the Teaching Clinic

4.1 COMPREHENSIVE CASE HISTORY RECORDS 1

Student Name: ______________________________

Department: ______________________________

Date Completed: ______________________________

Final Mark: __________________

SECTION 1: GENERAL INFORMATION

Name:
Sex:
Place of Birth:
DOB:
Occupation:
M.S.
Father/Mother's Name (If Infants):
Nationality:
Case History Provider:
Season of Occurrence:
Date of First Visit:
Contact Phone Number:

SECTION 2: DATA COLLECTED FROM FOUR DIAGNOSTIC TECHNIQUES

2.1 INQUIRIES:

2.1.1 Chief Complaint:

2.1.2 Present case history:

2.1.3 Previous history:

2.1.4 Personal history (includes menstruation, pregnancy, leucorrhoea and delivery for females):

2.1.5 Family history:

2.2 INSPECTION / OBSERVATION:

2.2.1 Spirit:

2.2.2 Complexion:

2.2.3 Appearance:

2.2.4 Body stature:

2.2.5 Tongue:

2.2.6 Other parts of the body:

2.2.7 Excretion and Secretion

2.3 AUSCULTATION & OLFACTION:

2.3.1 Auscultation:

2.3.2 Olfaction:

2.4 PALPATION:

2.4.1 Pulse:

2.4.2 Palpation of different parts of the body:

SECTION 3: WESTERN MEDICAL RECORDS

3.1 Physical examination:

3.2 Laboratory tests results

SECTION 4: DIFFERENTIATION AND ANALYSIS

4.1 (a) Syndromes:

(b) Evidence to support each syndrome:

4.2 Analysis of the aetiology and pathogenesis (i.e. to explain the differentiation of your main syndrome or condition).

4.3 Principles of treatment:

4.4 Prescription and Administration (includes acupuncture and herbal medicine):

4.4.1 Comments / Notes for Future Reference

4.5 Measures of prevention and health care (including diet and exercise):

SECTION 5: DIAGNOSIS SUMMARY:

5.1 Name of Disease in Chinese Medicine

The Syndrome:

5.2 Western Medicine Diagnosis

....
(Student's Name - Please Print)

....
(Student's Signature) (Date)

Supervisor's Comments:

..../........./........
(Supervisor's Signature) (Date)

Appendix G Return Case Record

15

4.3 RETURN CASE RECORD – 1

NAME: F M Age: Date:......../......../........ Visit No:

Chief Complaint:

Present History:

Key outcome measure:
(1)
(2)
(3)

Present condition since last treatment:

	Rate	Pulse description
L	/min	
R	/min	

Further Notes: including changing and new emerging conditional chief complaint, and management plan;

Chinese Med Disease:

Syndrome:

Western Medicine diagnosis:

Treatment Principles:

Selected Formula:

Herbs	Raw (g)	Powder (g)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Raw herbs – .... packs; Powder – week(s)

Acupoints (L/R&B) (IA/Cupping) Acupoints (L/R&B) (IA/Cupping)

Ashi point location:

Massage/Tuina areas:

Special Herbal Preparation:

Supervisor Sig

Student Name

Appendix H Plain Language Statement and Survey Questionnaire (Final Draft)

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Project Title: Chinese Medicine Usage in Respiratory Conditions

Dear Participants,
You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate.

What is the project about? What are the questions being addressed?
This project investigates public health issues related to Chinese medicine usage in the Chinese Medicine Teaching Clinic, RMIT University, Bundoora. This survey is to assess your usage, knowledge, treatment outcomes and compliance regarding Chinese medicine treatments. This project focuses on respiratory conditions as they are among the top conditions identified for seeking complementary medicine care. This project has been approved by the RMIT Human Research Ethics Committee and is part of Miss Najbah's Master Degree in Applied Science from the RMIT University.

Why have I been approached?
You have been invited because you met the following criteria:

- visited the Chinese Medicine Teaching Clinic, RMIT University, Bundoora in 2010 and 2011; and
- presented with a respiratory condition/s as your complaint.

Your contact address was obtained from the medical records of the Chinese Medicine Teaching Clinic, RMIT University, Bundoora.

If I agree to participate, what will I be required to do?
If you agree to participate, you will be asked to complete the enclosed survey questionnaire. It takes about 10 minutes to complete the survey. After completing the survey, please mail the survey using the prepaid return envelope before **15 March 2013**.

What are the possible risks or disadvantages?
This project requires you to complete a survey questionnaire. It does not involve any manipulation. Thus, there are no perceived risks outside your normal day-to-day activities other than taking up your time.

What are the benefits associated with participation?
The information generated from this project may provide an insight of patients with respiratory conditions and on patients' knowledge and safety aspects of Chinese medicine treatment. By understanding these issues, accurate and detailed information can be delivered to practitioners and patients. In addition, the project findings may help to better understand and plan for an improved curriculum design, clinical teaching and medical record documentation. Monetary reward is not available to participants.

What are my rights as a participant?
Your involvement in this project is voluntary. If you do not wish to take part, you do not have to. You will receive the best possible care whether you take part or not. It is your right as a participant in this study to: 1) not complete this survey questionnaire; 2) ask any questions about the study.

What will happen to the information I provide?
No information obtained in connection with this aspect of the research project can identify you. You are specifically asked not to provide us with any identifying information. All the responses that you provide to the questions asked in this survey will only be used for the purpose of this research project. Due to the nature of data collection, we are not obtaining written informed consent from

you. Instead, we assume that you have given consent by your completion and return of the survey questionnaire.

All the information (personal, health information and other data) provided in this survey questionnaire will be anonymous. It will be stored securely at RMIT electronically in a password protected computer. The paper copies will be stored in locked filing cabinets. Only researchers involved in the project have access to the data. All data will be kept at RMIT for a period of 15 years after publication. At the end of this period, the documents will be destroyed according to the University's document disposal procedure.

The data collected during the project will not be involved in the establishment of a databank. In any form of publication and/or presentation, only group data, not personal data, will be presented.

As the survey is completely voluntary and anonymous, the results of the survey will not be made available to you. Instead, for those who are interested to receive a summary of findings on the project, please email s3352798@student.rmit.edu.au. The key findings will be published in scholarly journals and conference presentations.

Whom should I contact if I have any questions?

Please contact Miss Najbah by phone at 03-9925 7177, or via email s3352798@student.rmit.edu.au.

Yours sincerely,

Miss Wan Najbah Nik Nabil (BPharm) [1]
Dr Tony Zhang (PhD) [2]
Dr Iris Zhou (PhD) [2]
Prof Charlie Xue (PhD) [3]

[1] Discipline of Chinese Medicine, School of Health Sciences,
RMIT University
Email address: s3352798@student.rmit.edu.au
Phone number: 03-9925 7177

[2] Discipline of Chinese Medicine, School of Health Sciences,
RMIT University

[3] School of Health Sciences, RMIT University

Any complaints about your participation in this project may be directed to the Ethics Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251. Details of the complaints procedure are available on the Complaints with respect to participation in research at RMIT page. (http://www.rmit.edu.au/browse;ID=2jqrnb7hnpyo)

RMIT UNIVERSITY

Discipline of Chinese Medicine

Survey Questionnaire:
Chinese Medicine Usage for Respiratory Conditions

2012/2013

Please do not write your name on this questionnaire

Section A: Respiratory Conditions and Health Services

Please tick (✓) the relevant boxes

1. With which respiratory condition(s) have you been diagnosed?
   (May tick more than one, if applicable)
   1☐ Allergic Rhinitis such as hay fever
   2☐ Asthma
   3☐ Chronic obstructive pulmonary disease (COPD) including emphysema and chronic bronchitis
   4☐ Chronic sinusitis
   5☐ Common cold
   6☐ Pneumonia
   7☐ Obstructive sleep apnoea
   8☐ Other, please state: ____________________
   9☐ No, I have never been diagnosed with any respiratory conditions (If you have answer "No", you do not need to complete the remainder of the survey, please return this survey to the researcher. Thank you for your time.)

2. In the last 2 years, have you sought any treatment(s) from a general practitioner (GP) or a medical specialist, for your respiratory condition(s)?
   1☐ Yes 2☐ No

3. Please list any medications (including complementary and alternative treatment) that you are currently taking for your respiratory condition(s) (if applicable).

   1) ____

   2) ____

   3) ____

4. In the last 2 years, how many times did you visit the RMIT Chinese Medicine Teaching Clinic?

   ____________ times

5. In the last 2 years, which of the following treatment(s) did you receive from the RMIT Chinese Medicine Teaching Clinic for a respiratory condition? *(May tick more than one, if applicable)*
   1☐ Acupuncture 2☐ Chinese herbal medicine
   3☐ Cupping 4☐ Chinese massage (tuina)

6. In the last 2 years, were there any improvements in your respiratory condition(s) from the Chinese medicine treatment?
   - 1☐ Cured (as advised by a health practitioner)
   - 2☐ Noticeable clinical improvement (as advised by a health practitioner)
   - 3☐ Some clinical improvement (as advised by a health practitioner)
   - 4☐ Symptom improvement as perceived by yourself
   - 5☐ No improvement in respiratory condition but improvement in general wellbeing
   - 6☐ No improvement in respiratory condition
   - 7☐ Symptoms worsened
   - 8☐ I do not remember

7. Did you have Chinese medicine treatment together with Western medicine (or other treatment) for your respiratory condition(s)?
   1☐ Yes 2☐ No

8. Do you usually tell your GP about your Chinese medicine treatment(s) for your respiratory condition?
   - 1☐ Yes
   - 2☐ No

   If not, please tick the reason(s): *(May tick more than one, if applicable)*
   - 3☐ I did not have time to tell him/her during the consultation
   - 4☐ I think he/she does not need to know
   - 5☐ I was concerned that he/she may ask me to stop other treatment
   - 6☐ He/she did not ask
   - 7☐ Other reason , please state: ______________________________

9. Do you usually tell your Chinese medicine practitioner about other treatment(s) that you take for your respiratory condition?
   - 1☐ Yes
   - 2☐ No

   If not, please tick the reason(s): *(May tick more than one, if applicable)*
   - 3☐ I did not have time to tell him/her during the consultation
   - 4☐ I think he/she does not need to know
   - 5☐ I was concerned that he/she may ask me to stop other treatment
   - 6☐ He/she did not ask
   - 7☐ Other reason , please state: ______________________________

10. In the last 2 years, have you experienced any side effects that you believe are related to treatment received from the RMIT Chinese Medicine Teaching Clinic?
   - 1☐ Yes (please go to Question 11) 2☐ No (please go to Question 14)
   - 3☐ Not sure (please go to Question 14)

11. Who concluded that the side effects were related to Chinese medicine treatment that you received?

[1] ☐ Myself [2] ☐ GP [3] ☐ Chinese medicine practitioner

12. Please list any side effects of the Chinese medicine treatment below and rate the severity by ticking the relevant box.

Treatment	Side Effects	Severity* 1-Very mild 5-moderate 10-very severe
Acupuncture	1) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	2) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	3) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
Chinese Herbal Medicine	1) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	2) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	3) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
Cupping	1) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	2) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	3) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
Chinese Massage (Tuina)	1) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	2) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐
	3) ____________	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐

*This scale is rated from 1 to 10 to indicate the severity of the side effects

1 = **Very mild** (easily tolerated or causing minimal discomfort, e.g. unpleasant taste)

5 = **moderate** (significant discomfort, enough to interfere with daily activities, e.g. fever, noticeable drowsiness)

10 = **very severe** (life threatening and/or requiring hospitalisation)

13. Did you inform your Chinese medicine practitioner about the side effects?
- [1] ☐ Yes
- [2] ☐ No If not, please tick the reason(s): *(May tick more than one)*
  - [3] ☐ I did not have time to tell him/her during the consultation.
  - [4] ☐ I think he/she does not need to know.
  - [5] ☐ He/she did not ask.
  - [6] ☐ Other reason, please state: ______________________________

Section B: With regards to your experience of Chinese Medicine treatment(s) for your respiratory condition, please tick [✓] the most relevant box

	Statements	Yes	No	N/A*
14.	Have you sometimes forgotten to take your Chinese herbs?	☐	☐	☐
15.	When you travel, have you ever forgotten to bring along your Chinese herbs?	☐	☐	☐
16.	Have you ever stopped taking Chinese herbs because you felt better?	☐	☐	☐
17.	Have you ever taken less of your Chinese herbs than the prescribed dosage because you felt better?	☐	☐	☐
18.	Have you ever stopped taking your Chinese herbs because they did not help?	☐	☐	☐
19.	Have you ever taken more of your Chinese herbs than the prescribed dosage because you felt that more herbs are better?	☐	☐	☐
20.	Do you have trouble following the instructions for taking Chinese medicine?	☐	☐	☐
21.	Have you ever stopped seeing your Chinese medicine practitioner because you felt better?	☐	☐	☐
22.	Have you ever stopped seeing your Chinese medicine practitioner because you thought it was not helpful?	☐	☐	☐

**N/A: not applicable*

<u>Section C: With regards to your knowledge of Chinese medicine, please tick [✓] the most relevant box</u>

	Statements	True	False	Not sure
23.	Chinese medicine practitioners need to be registered in Australia.	☐	☐	☐
24.	There are no regulations on advertising for Chinese medicine.	☐	☐	☐
25.	Chinese medicine considers the mind and spirit of the patients.	☐	☐	☐
26.	In Chinese medicine, *Qi* describes the energy flow in the body.	☐	☐	☐
27.	Chinese herbs include plants, minerals and animal products.	☐	☐	☐
28.	Chinese herbs are prescribed according to an individual's constitution.	☐	☐	☐
29.	Chinese herbs may interact with some western medicine medications.	☐	☐	☐
30.	There may be side effects from Chinese herbs.	☐	☐	☐
31.	Acupuncture involves inserting needles at certain points of the body.	☐	☐	☐
32.	There are no allergic reactions from acupuncture treatments.	☐	☐	☐
33.	Acupuncture may release natural painkillers within the body.	☐	☐	☐
34.	Acupuncture can be used for a range of conditions such as obesity, back pain, insomnia, or headache.	☐	☐	☐

Section D: Demographic Information

(No identifiable data in this section)

Gender: [1] ☐ Male [2] ☐ Female

Age: ________ years old

Country of birth:
[1] ☐ Australia
[2] ☐ Other, please state : ________________

Annual household income (AUD$):
[1] ☐ Less than $20,000
[2] ☐ $20,000 - $39,999
[3] ☐ $40,000 - $59,999
[4] ☐ More than $60,000

Highest education:
[1] ☐ Primary school
[2] ☐ Secondary school
[3] ☐ TAFE
[4] ☐ Tertiary education

Employment:
[1] ☐ Employed
[2] ☐ Unemployed
[3] ☐ Not in the labour force

35. Do you have private health insurance?
[1] ☐ No
[2] ☐ Yes

If yes, do you have cover for Chinese medicine treatment (including acupuncture)?
[3] ☐ Yes
[4] ☐ No
[5] ☐ Not sure

Thank you for your time!

Please return the completed questionnaire within the enclosed prepaid envelope

Appendix I Plain Language Statement and Survey Questionnaire (First Draft)

RMIT UNIVERSITY

Discipline of Chinese Medicine

Survey Questionnaire:
Chinese Medicine Usage for Respiratory Diseases

2012

Please do not write your name on this questionnaire

1

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Project Title: Public Health Issues Related to Chinese Medicine Usage in Respiratory Diseases

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate.

What is the project about? What are the questions being addressed?

This project investigates public health issues related to Chinese medicine usages in Chinese Medicine Teaching Clinic, RMIT University, Bundoora. The aim of this survey is to assess the participants' knowledge, treatment outcomes, usage, communication and compliance regarding Chinese medicine treatments. The emphasis is on respiratory diseases as it is prevalent in Australia. This project has been approved by the RMIT Human Research Ethic Committee.

Why have I been approached?

You have been invited because you had met the inclusion criteria:

- visited Chinese Medicine Teaching Clinic, RMIT University, Bundoora in 2010 and 2011; and
- had respiratory disease as your chief complaint.

Your contact address has been obtained from the medical records in Chinese Medicine Teaching Clinic, RMIT University, Bundoora.

If I agree to participate, what will I be required to do?

If you agree to participate, you will be only asked to complete the enclosed survey questionnaire. It takes about 10 minutes to complete the survey. After completing the survey, please mail the survey using the RMIT-addressed return envelope prior ..... (enter date once HREC approved).

What are the possible risks or disadvantages?

This project requires participants to complete the survey questionnaire, it doesn't involve any manipulation. Thus, there are no perceived risks outside the participants' normal day-to-day activities.

What are the benefits associated with participation?

The information generated from this project provides insight into patients with respiratory disease and knowledge and safety aspects related to Chinese medicine treatment. By addressing and understanding issues on knowledge, compliance and adverse events, accurate and detailed information can be delivered to student practitioners and patients. In addition, the project findings may help to better understand and plan for improving curriculum design, clinical teaching and medical record documentation. Monetary reward is not available to participants.

What are my rights as a participant?

You involvement in this project is voluntary. If you don't wish to take part, you don't have to. You will receive the best possible care whether you take part or not.

It is your right as a participant in this study 1) to not completing this survey questionnaire, 2) to have any questions about the study being answered.

What will happen to the information I provide?

Any information obtained in connection with this research project that can identify you will remain confidential and will only be used for the purpose of this research project. Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) a court order is produced, or (3) you provide the researchers with written permission.

All the information (personal and health information and other relevant data) provided in this survey questionnaire will be anonymous. It will be stored securely at RMIT electronically in a password protected computer program. The paper copies will be stored in locked filing cabinets. Only researchers involved in the project have access to the data. All data will keep at RMIT for a period of 15 years after publication. At the end of the period, the documents will be destroyed according to the University's document disposal procedure.

The data collected during the project will not be involved in the establishment of a databank. In any form of publication and/or presentation, only group data, not personal data, will be presented.

As the survey is completely voluntary and anonymous, the results of the survey will not be made available to all participants. Instead, for participants who are interested to receive a summary of findings on the project, please email s3352798@student.rmit.edu.au. In addition, the key findings will be published in a peer-review scientific journal and conference/seminar presentations.

Because of the nature of data collection, we are not obtaining written informed consent from you. Instead, we assume that you have given consent by your completion and return of the survey questionnaire.

Whom should I contact if I have any questions?
Please contact Miss Najbah at 03-9925 7117, or s3352798@student.rmit.edu.au.

Yours sincerely
Miss Wan Najbah Nik Nabil (BPharm) [1]
Dr Tony Zhang (PhD) [2]
Dr Iris Zhou (PhD) [2]
Prof Charlie Xue (PhD) [3]

[1] Discipline of Chinese Medicine, School of Health Sciences,
RMIT University
Email address: s3352798@student.rmit.edu.au
Phone number: 03-9925 7117

[2]Discipline of Chinese Medicine, School of Health Sciences,
RMIT University

[3]School of Health Sciences, RMIT University

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Any complaints about your participation in this project may be directed to the Ethics Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251. Details of the complaints procedure are available on the Complaints with respect to participation in research at RMIT page

RMIT UNIVERSITY

Public Health Issues Related To Chinese Medicine Usage in <u>Respiratory Diseases</u>

Survey Questionnaire

Section A: Respiratory diseases and health services

Please tick (✓) the relevant boxes

1. Which respiratory diseases have you been diagnosed?
   - ☐ No, I have not been diagnosed with any respiratory diseases (you don't need to complete the survey questionnaire, please return the questionnaire to the researcher)
   - ☐ Allergic Rhinitis *(hay fever)*
   - ☐ Asthma
   - ☐ Chronic obstructive pulmonary disease (COPD) including emphysema and chronic bronchitis
   - ☐ Chronic sinusitis
   - ☐ Common cold
   - ☐ Pneumonia
   - ☐ Sleep apnoea
   - ☐ Other, please state: ______________________________

2. In the last 2 years, have you sought any treatment from a general practitioner (GP) or a medical specialist, for your respiratory disease?

   ☐ Yes (please proceed to Question 3) ☐ No (please proceed to Question 4)

3. Please list any prescribed medications that you are currently taking for respiratory disease (if applicable).

   a. ________________ c. ________________

   b. ________________ d. ________________

4. In the last 2 years, have you used any of the following treatment for your respiratory disease from RMIT clinic?

	No	Yes
a) Acupuncture	☐	☐
b) Chinese herbal medicine	☐	☐
c) Chiropractic	☐	☐
d) Osteopathy	☐	☐

5. In the last 2 years, estimated how many times have you visit these practitioners (if applicable) in RMIT clinic?

a) Acupuncture ________times

b) Chinese herbal medicine ________times

c) Chiropractic ________times

d) Osteopathy ________times

6. In the last 2 years, what was the outcome of the treatment?
   ☐ Cured (as advised by a health practitioner)
   ☐ Noticeable clinical improvement (as advised by a health practitioner)
   ☐ Some clinical improvement (as advised by a health practitioner)
   ☐ Symptom improvement as perceived by yourself
   ☐ No improvement or getting worse

7. Do you generally tell your GP about your Chinese medicine usage for your respiratory disease?
   ☐ Yes (please proceed to Question 9) ☐ No (please proceed to Question 8)

8. If "No", please tick the reason(s) :

a) I think my practitioner is too busy.	☐
b) My practitioner may ask me to stop the other treatment.	☐
c) I feel that my practitioner doesn't need to know.	☐
d) My practitioner didn't ask.	☐
e) Other, please state : ________________________	☐

9. Do you generally tell your Chinese medicine practitioner about the other treatment that you are having for respiratory disease?
   ☐ Yes (please proceed to Question 11) ☐ No (please proceed to Question 10)

10. If "No", please tick the reason(s) :

a) I think my practitioner is too busy.	☐
b) My practitioner may ask me to stop the other treatment.	☐
c) I feel that my practitioner doesn't need to know.	☐
d) My practitioner didn't ask.	☐
e) Other, please state : ________________________	☐

Section B

For the respiratory diseases treatment that you have from RMIT Chinese Medicine Teaching Clinic, please answer the following questions.

Please tick (✓) the relevant boxes

11. In the last 2 years, have you experienced any adverse events that you believe is related to Chinese medicine treatment received from the RMIT Teaching Clinic?
   ☐ Yes (please go to Question 12) ☐ No (please go to Question 16)

12. Please state the adverse events and rate the severity (circle the most appropriate answer).

***The severity of the adverse event:

1 = **mild** (easily tolerated or causing minimal discomfort, e.g. unpleasant taste)

5 = **moderate** (significant discomfort, enough to interfere with daily activities)

10 = **very severe** (life threatening and/or requiring hospitalisation/therapeutic intervention)

The link between adverse events and treatment

1 = unrelated, 2 = possibly, 3 = probably, 4= definitely, N/S = Not sure about the link

	Adverse events	Using a scale of 1 to 10 to show the severity of the adverse events***	Link between adverse events and treatment ###
a) Acupuncture	i.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
	ii.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
b)Chinese herbal	i.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
	ii.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
c) Cupping	i.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
	ii.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
d) Massage	i.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4
	ii.________	1---2---3---4---5---6---7---8---9---10	N/S 1---2---3---4

13. Who verified that the adverse events were related to Chinese medicine treatment that you have received?

❑ Myself ❑ GP ❑ Chinese medicine practitioner

14. Did you inform the Chinese medicine practitioner about the adverse events?

❑ Yes (please go to Question 13) ❑ No (please go to Question 12)

15. Please select the **MAIN** reason for not telling your Chinese medicine practitioner.

❑ I think my practitioner is too busy.

❑ I feel that my practitioner doesn't need to know.

❑ My practitioner didn't ask.

❑ Other, please state: ________________________________

Section C

Please tick (✓) which you think is appropriate.

	Statements	True	False	Not sure
16.	Chinese medicine practitioners need to be registered with a Chinese Medicine Board.	☐	☐	☐
17.	There are no regulations on advertising for Chinese medicine.	☐	☐	☐
18.	Chinese medicine considers the mind and spirit of the patients.	☐	☐	☐
19.	*Qi* describes the energy flow in the body.	☐	☐	☐
20.	Chinese herbs include plants, minerals and animal products.	☐	☐	☐
21.	Chinese herbs are prescribed according to individual needs.	☐	☐	☐
22.	Chinese herbs do not interact with other medications.	☐	☐	☐
23.	People may have side effects from Chinese herbs.	☐	☐	☐
24.	Acupuncture involves inserting needles at certain points of the body.	☐	☐	☐
25.	There are no allergy reactions towards acupuncture treatments.	☐	☐	☐
26.	Acupuncture may release natural painkillers in the body.	☐	☐	☐
27.	Acupuncture can be used for a range conditions including musculoskeletal pain	☐	☐	☐

Section D

Please tick (✓) which you think is appropriate.

	Statements	Yes	No	Not applicable
26.	Have you at times, takes the Chinese herbs without strictly following the given instruction?	☐	☐	☐
27.	Have you ever forgotten to take your Chinese herbs?	☐	☐	☐
28.	Have you ever stopped taking Chinese herbs because you felt better?	☐	☐	☐
29.	Have you ever taken less of your Chinese herbs than the prescribed dosage, because you felt better?	☐	☐	☐
30.	Have you ever stopped taking your Chinese herbs because it does not help?	☐	☐	☐
31.	Have you ever taken more of your Chinese herbs than the prescribed dosage, because you felt that more herbs would help you getting better?	☐	☐	☐
32.	Have you ever stopped having acupuncture treatments because you felt better?	☐	☐	☐
33.	Have you ever getting less session of acupuncture treatments than planned, because you felt better?	☐	☐	☐
34.	Have you ever stopped having acupuncture treatments because it does not help?	☐	☐	☐

Section E

This section is important for data analysis to draw meaningful conclusion. Please complete all sections. No identifiable information will be collected.

Please tick (✓) the relevant boxes

Gender:	☐ Male ☐ Female	Date Of Birth:	__/__/_____ (dd/mm/yyyy)
Country of birth:	☐ Australia ☐ Overseas (Please state : ________________)	Highest education:	☐ Did not complete secondary school ☐ Completed secondary education ☐ Diploma / TAFE ☐ Tertiary education
Annual household income (AU$):	☐ < $ 20,000 ☐ $ 20,001 - $ 40,000 ☐ $ 40,001 - $ 60,000 ☐ $ 60,001 and above	Employment:	☐ Full time employed ☐ Part time employed ☐ Pensioner ☐ Self-employed ☐ Unemployed ☐ Other, please state : ____________________

35. Do you have private health insurance?
 ☐ Yes (please proceed to Question 36) ☐ No (end of survey)

36. With your private health insurance, do you have cover for acupuncture and/or Chinese herbal medicine treatment?
 ☐ Yes, acupuncture treatment only
 ☐ Yes, Chinese herbal medicine treatment only
 ☐ Yes, both acupuncture and Chinese herbal medicine treatments
 ☐ No

Thank you for the time to complete this survey questionnaire

Please return the completed questionnaire using the enclosed reply-paid envelope.